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ON

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CONSULTING SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

MR. PRESIDENT, LADIES, AND GENTLEMEN,—Human beings may fairly be divided into three classes in their relation to the affairs of this world. First, are they who see that a thing is wrong: they are very numerous, especially in their relation to politics, and their opinion is in these days frequently referred to as the opinion of "the man in the street." Next, are they who see how what is wrong should be put right. They are not so numerous as those of the first class and for one who sees clearly there are at least many hundreds who only dimly see. And of those who see clearly few are capable of putting the wrong thing right. Few of them, indeed, have the inclination to do so and of those few still fewer are capable of doing so; they are for the most part talkers, not workers. And, third, are they who set to work, diligently and with determination, to correct the wrong. They are not necessarily the persons who first discerned the wrong or who saw clearly the means by which the wrong might be corrected. Sometimes, indeed, they are merely workers, what are termed "humble instruments," but the work which they accomplish in this world and for the good of man is greater than words can tell.

I am going to give a short sketch of the life of a man who saw, long before the men of his time, that there was something seriously wrong with surgery, who saw clearly what was needed to correct the wrong; and who, in the prime of manhood, resolutely set himself the task of doing all that he could to set the wrong right, and continued to pursue that object for the remainder of his life, to the impairment of his health and to the expenditure of his fortune.

In most of the Hunterian orations which I have read or to which I have listened it has been taken for granted that Hunter's aims and objects were already familiar to the audience and particular parts of his work and character have been dealt with. I might have taken a similar course; but a year ago, when my colleagues on the Council of the College did me the honour of appointing me Hunterian orator for 1907, I found myself so very ignorant of what Hunter wished to do and of what he actually did that I thought it would be grateful to my audience, as it would have been to me in some past Hunterian oration, if I dealt rather with the great scheme of Hunter's life and with the means which he took to accomplish it.

I have no doubt I ought to have known better, but I confess I had an impression, which was probably derived from conversation, from desultory reading, and from these orations, that surgery before the time of Hunter was in a deplorable condition and that it was immediately and at once raised from that condition by the influence which Hunter's work effected, particularly by one or two brilliant achievements on which much stress has been laid and which were the result of the application of principles which had not hitherto been recognised or at least applied to surgery. In order to discover how far this impression was correct I took some pains to make myself acquainted with the condition of surgery in Europe during the latter half of the eighteenth century and to compare it with the surgery of the first half of the nineteenth century. I was speedily disillusioned in regard to the first part of my impression. There were not only good but brilliant surgeons in the great European countries, such as Sharp and Pott in England, Desault in France, and Richter in Germany, who treated accidents and surgical diseases and performed operations of many kinds with sagacity and skill, and who carried their patients through to recovery in a manner of which the nineteenth century might well have been proud. They taught well and wrote well. Indeed, I was so much impressed by their writings that I would venture to recommend the perusal of them to all those who, like myself, might be disposed to under-rate the surgery of the period. They display considerable knowledge of the diseases with which they deal, a patience and care in treatment which would do credit to any age, and a desire rather to avoid than to rush into operation which might well serve as an example to the present day. And many of them are admirable for their style and language; indeed, the works of Mr. Pott have seldom been surpassed in surgical literature for purity of language and excellence of style. These men and other surgeons of their time taught good surgery, and further insisted on the importance of the practical study of anatomy as a basis for surgery, with the result that the general practice of surgery in the capitals and great towns of the European kingdoms was far more advanced than I could have believed possible. So much so that it is probable there were many persons, medical and lay, who would have been ready to affirm that surgery had reached its zenith and that little could be done to improve it beyond what the observation and experience of succeeding generations might provide.

But when one looks more deeply into the question it soon becomes evident that there was a lack of knowledge on many matters which we now regard as essential to the proper practice of our art. The structure of organs, their vital relation to one another, their necessity or otherwise in the economy, their functions, and the manner in which their functions are performed were for the most part matters of conjecture; the changes which they undergo in health and at different periods of life, and the variations which they may exhibit within the limits of health were held of small account; while the changes which they undergo in disease or as the result of accident were scarcely studied, for few people seem to have thought them worthy of serious study. In truth, the only scientific basis of surgery in that period was anatomy, and anatomy was studied rather for its direct service to the individual surgeon than with the belief that it might prove of great use to the art if it were studied from a wider point of view. Biology, physiology, physics, chemistry and pathology had no place in the education of the surgeon, and those few persons who ventured—as some advanced thinkers did—to maintain that a knowledge of physiology and pathology was desirable in a medical man were for the most part treated with contempt or were left to preach unheeded.

In truth, the surgery of that period was composed of a vast unwieldy mass of observation and experience, balanced on a single point, the study of anatomy; it was like some great logan-stone, which even the weakest force might rock and a violent shock might overthrow. No wonder if, in these circumstances, opinion on vital questions wavered. No wonder if methods of treatment which had been discovered or invented long before and which have since been employed with the greatest benefit to mankind, such as Ambroise Paré's ligature of vessels, fell into disuse or were discredited from ignorance of the processes by which they were accompanied and on which their success depended. No wonder if surgeons shrank from dealing with organs of the structure and functions of which they knew so little or feared to apply measures the effect of which they could only dimly imagine. Surgery in the eighteenth century may fitly be compared with navigation before the use of the compass. The mariners of those days went down to the sea in ships and accomplished voyages, often difficult and dangerous, under the guidance of the stars by night and of well-known marks by day. They carried them through, not once but again and again, successfully and with a marvellous confidence begotten of experience and observation. So did the surgeon, guided by similar observation and experience, carry his patients through sickness and operation so often and so surely that he may well have felt that there could be no better guides than he and his fathers before him were accustomed to rely on. But, as the great open seas and oceans were inaccessible to the sailor until he had acquired the compass, so was surgery restricted within certain narrow limits by the lack of that scientific basis on which it now reposes. And so it might have remained and we might still be in the condition of our forefathers had not an event occurred which attracted no attention at the moment and on which if it had been noticed, no hope would have been placed. For in the year 1748 a young man arrived in London from the North and became assistant in the dissecting-room of his distinguished brother, a post

which he seems himself to have solicited. He was just 20 years of age and his record thus far was certainly not of such a character as to encourage great expectations for his future. His education seems to have been neglected, for he had shown no inclination to studies, to which his mother does not appear to have forced him. He had spent most of his time in country sports, and the only attempt at industry which he seems to have made was to help his brother-in-law, the cabinet-maker, out of his difficulties, an attempt which had been a failure. For the rest, he was rough in his manners, rather disposed to coarse than to refined society, and quite as inclined to loose habits as other young men of his age and of his time. I suppose Dr. William Hunter must have recognised that his brother John had good abilities, but how he would use them or, indeed, whether he would use them at all was a matter of conjecture, so that his appointment to the post of assistant in the dissecting-room was quite an experiment. No one of his family or of his friends would have been the least surprised if he had, within a few months or even weeks, broken his engagement and betaken himself back to Long Calderwood, whence he came. And certainly no person at that time would have ventured to predict that "Jack Hunter" would not only display a life-long industry such as has seldom been exceeded, but would leave behind him a reputation which we to-day, 114 years after his death, celebrate with that fervour which is born of our conviction of his value to the art of surgery and, as a natural corollary, to the human race.

There are few better examples of the moulding of a man's character and future by external circumstances than the history of Hunter's life affords. This rough and ill-shaped peg found the hole which it exactly fitted. From the moment he took the dissecting scalpel and forceps in his hand he began to work with pleasure. Nor was it the mere manual dexterity which his employment demanded which satisfied his spirit, although there can be no doubt that the use of his hands in skilled labour afforded him a satisfaction which continued to the end of his life. Anatomy itself attracted him, and he threw himself into the study of it with such success that within a few months he had acquired sufficient knowledge to enable him to direct the pupils of William Hunter's school. Many a young man might have gone thus far and there remained, content with the occupation for a livelihood and for the pleasure it gave him. Happily, Hunter's ambition urged him to become a surgeon, and within a year of his arrival in London he began to attend the Chelsea Hospital. It is not needful to follow his progress closely during the next few years, or to discuss the reasons why he went to Oxford or why he came away again so speedily. It suffices to tell that whether he was studying at the Chelsea Hospital or at St. Bartholomew's or at St. George's he seems to have spent all the time he could in the dissecting-room. He dissected, injected the vessels by methods which had been recently invented, mounted specimens, and thus acquired skill in anatomy and, quite as important in his case, the love of collecting, which, like the love of money, seems to advance with age and to increase with what it feeds on until it becomes a greed. His first discovery in anatomy so far as history has handed it down to us was in 1754, when he solved the problem of the mode of connexion between the placenta and the uterus, and in 1758 he instituted a set of experiments for the purpose of ascertaining whether veins possess the power of absorbing. So that we find him at the age of 30 years a qualified surgeon with a strong bias towards the scientific side of his profession and with an inquiring and original mind which incited him to discover facts hitherto unknown by careful observation and experiment. He was just beginning to study comparative anatomy in the same way in which he worked at human anatomy when a misfortune occurred which menaced his whole career, if not his life. For he fell ill of inflammation of the lungs and was threatened with consumption and by-and-by was forced to leave London. He became a military surgeon and might have drifted into the condition of the men painted by Smollett and Lever. But by this time he had become a serious man and the forcing of his attention on sick and wounded men, which his military service imposed upon him, had a great effect upon his mind. It impressed him with an interest in the maladies of human beings which never again left him and which directed his scientific investigations to the elucidation of the problems of health and disease. Even when heavily occupied in the Peninsula he found time to conduct certain experiments in physiology; and the experience he gained in gunshot wounds and the observations which he made upon them formed the foundation of his later work on gunshot wounds and inflammation.

On his return to London in 1763 his place in his brother's school was filled, he had no regular employment, no certain means of subsistence, and before him lay a hard struggle, for he settled down to push his way in London as a surgeon. It was no rosy path and, in his case, there was no sudden jump into success, but a hard fight for everything which he obtained, and a fight which had to be continued during many years. It is always interesting to follow the progress to success of a young man in these circumstances; particularly when, as in the case of Hunter, there were special difficulties to overcome. But, to us, this period offers a much deeper interest, for it is undoubtedly the period when the great work of his life gradually unfolded itself in his mind. There can be no doubt that he had seen for a long time past that surgery rested on a very frail foundation and that it would be impossible to carry it much farther forwards or even to practise it with confidence so long as it had no firmer basis. He rightly judged that they who treat diseased bodies should have an intimate acquaintance with the structure and functions of those bodies in health; that they should know, so far as such knowledge is possible, the changes which those bodies undergo in the progress of disease, and the further changes which they undergo in the progress towards recovery. He perceived that each part and organ of the body must be studied not only by itself but in its relation to all other parts; and he had already come to the conclusion that great light might be thrown upon these matters by a study of similar parts in animals, from the highest to the lowest. For, a knowledge of comparative anatomy would not only suggest the meaning of what might otherwise be regarded as meaningless or useless anomalies in man, but would furnish a much better criterion of the relative value of the various organs and of the parts of organs than could be acquired from their study solely in the human subject. It would be possible, too, to observe on animals the effects of injury and disease which had been deliberately produced, and, perhaps, to obtain a much clearer notion of the effect of treatment than could be obtained in man. But, at that time, there was no material, either in this country or in any other, from which the information Hunter required could be obtained. And, if he was to acquire the information, he must first provide himself with the material: a labour in itself so costly and gigantic that I can scarce conceive that even his ambitious and determined spirit could, directly upon his return to London, and in the condition in which he then found himself, have seriously entertained it in the manner and to the extent he afterwards succeeded in carrying it through. I can only suppose that the idea gradually took root in his mind and expanded as he worked and that his range of observation became wider as each step led him further on and increased facilities of obtaining material presented themselves. It does, however, seem quite certain that, soon after his return to London, he began, though probably in a very small way. He collected specimens, dissected and prepared them, and, fortunately, preserved them. He studied them closely, compared them, recorded his observations on them, formed opinions on them, tested his observations and opinions by experiment, of which he was a master, both in the ingenuity with which he designed the experiment and in the skill with which he carried it out. He produced pathological conditions in animals by various means, studied them closely before and after death. He made post-mortem examinations on persons who died under his care, or whom he had seen in consultation, and kept careful records of them. And for the next 30 years of his life he continued this work, which was never interrupted save by illness. His collection grew, slowly at first, then more quickly, until he was obliged to make a place for it at Earl's Court, where he bought land and built a house. At a later period he acquired a site in Leicester-square and built a museum, in which he placed those preparations which could be kept in London.

Many of my predecessors have dwelt on Hunter's industry and capacity and on the vast amount of work which he accomplished. But mere language is impotent to give even an idea of this. The only means by which I can exhibit to you his labours and the working of his mind, is to demonstrate some portion of his work. For that purpose let us take the preparations of the intestinal canal, from the stomach to the end of the large intestine. Here it is in the articulata, in the mollusca, in the fish, in the reptile, in the bird, and in the mammal, and,

finally, in the highest of all mammals, in man. I have selected a characteristic specimen from each of the great orders which are represented in the museum. But I might have brought here from the articulata alone examples of the intestinal canal of 11 species, all collected by Mr. Hunter. The sea-mouse, the fly, the cicada, the dragon-fly, the termite, the bee, the cockchafer, the cockroach, the locust, the scorpion, and the cirripede are all represented on the shelves. There are specimens from nine different species of molluscs, from 13 species of fish, from seven species of reptile, from eight kinds of bird, and from 14 sorts of mammal. Some of the more interesting species furnish more than one specimen; the sturgeon, amongst fish, furnishes no fewer than nine, and the ostrich, amongst birds, 12 specimens, whilst the intestinal canal of man is of such interest that there are Hunterian specimens taken from white men, from black men, and from the unborn child. Many of these specimens are beautifully prepared and mounted and the injected specimens are a wonder in themselves. Of course, Mr. Hunter had good assistance, but it is nevertheless certain that a very large number of the specimens were dissected, injected, and set up by himself. At the end of 120 years most of them are in an admirable state of preservation and still show quite well what they were designed to show at the time they were put up.

Some collectors are content with the mere pleasure of collecting, with counting their treasures, and with seeing their collections increase. It was not so with Hunter. It is at once apparent that most of these preparations were the objects of long and special study. The description so frequently contains some observation over and above that which would have been sufficient for even an elaborate label. Thus the note to No. 629, which contains the alimentary canal of a mullet, says: "The intestine, after communicating at its commencement with the cæcal appendages, is convoluted in a peculiarly regular and concentric manner, forming a mass of a triangular form, adapted to the shape of the abdominal cavity and affording an example of proportionately the longest and, in its disposition, the most complex intestinal canal of any of the class." The description contains a comparison and suggests a wide range of study and an intimate knowledge, on the part of the author, not only with the anatomy of this particular fish but with that of fishes generally. It is the same with No. 655 (intestine of a lizard) and with No. 712 (a portion of the intestine of a whale). The description of the former tells how "the mesentery in this tribe of animals may be observed to be very simple; the intestine carries it forward immediately beyond the pylorus and runs along its right edge till it becomes colon or rectum"; while the latter specimen is one of those from which Hunter drew up his account of the anatomy of the whale tribe, and is used as an example of the differences which are to be observed in the intestinal canals of the bottle-nose, the piked whale, the porpoise, &c.

Ofttimes his study and observation of a preparation induced him to experiment. This bottle contains the dissected alimentary canal of a large fly. It is an admirable specimen, well prepared and mounted. The organs of digestion, to quote the words of Hunter, "are attended with a crop." It is possible that other persons were aware of this and had wondered why. But Hunter is not content with wondering; he must know whether the crop is a mere receptacle for food or whether it performs a function in digestion. And he tells us how he proved to his satisfaction that it is only a receptacle. He says:—

> I kept some of these flies fasting for some time: I then gave them milk which they drank readily, and when I thought they had filled their bellies I put them into spirits which assisted in coagulating the milk wherever it might be. On opening the abdomen I found this bag full of curd and whey, as also some in the stomach. That I might be still more certain that this bag was a reservoir only, and that it had no other business in digestion, and that therefore food would be taken into the stomach immediately, if immediately wanted, I repeated the above experiment with this difference—the milk was now coloured with cochineal; I not only found the bag full but the stomach and intestines, so that the food when wanted was immediately carried into the stomach. I kept a fly for 12 hours without food and then gave it milk and, killed it and found no milk in the crop, but it had got through almost the whole tract of intestines: here the animal had immediate occasion for food, therefore the milk did not go into the crop. (MSS.)

No fewer than three sets of experiments to discover the use of a tiny receptacle attached to the alimentary canal of a fly, a receptacle so insignificant that it might well have escaped the notice of even a tolerably skilled observer. These are only examples of hundreds or even thousands of experiments, undertaken on animals and plants, at all seasons of the year, under favourable and unfavourable conditions, and at all times of the day and night, if the experiment seemed to be as needful at night as in the daytime. The experiments were repeated, modified, varied, according as doubts arose in the mind of the experimenter of their correctness and whether they sufficed to prove his case. For no man knew better than Hunter the fallacies to which experiments are liable and the caution which should be exercised in deducing conclusions from them.

From the structure and functions of the intestines we come to their diseases. Here are Hunterian specimens, taken, for the most part, from the human subject, but not necessarily so. For one of these few is taken from an ox, another from an ass. They exhibit the effects of inflammation of the peritoneal covering and of the various coats of the intestines; they show tubercle, hydatids, ulcers, and the effects of accident. Some of them form the material for papers and theses; and there were many pages of manuscript notes upon them. The notes afford a wonderful insight into the incessantly inquiring nature of Mr. Hunter's mind. They abound in "queries." Thus, of this specimen (No. 2336) he observes that the coagulable lymph which glues the intestines together is extremely vascular and there immediately occurs the question, "How are these vessels formed? Are they elongations of the exhaling vessels forming arteries?" Again, of Specimen 2434, which was taken from the body of an officer who died from a bullet wound received in a duel in the ring in Hyde Park, there is a long account of the symptoms which followed on the injury and of the manner of the patient's death, with a full description of the appearances at the examination. Mr. Hunter adds:—

> This case admits of several observations and queries. First, the lowness and gradual sinking with the vomiting without blood, bespoke wounded intestines, and those pretty high up. It shows how ready Nature is to secure all unnatural passages, according to the necessity. Query, what could be the cause of his having no stool, even from a clyster? Were the intestines inclinable to be quiet under such circumstances? Would he not have lived if the immediate mischief had not been too much? I think that if the immediate cause of death had not been so violent Nature would have secured the parts from the secondary—viz., the extravasation of the fæces. What is the best practice where it is supposed an intestine may be wounded? I should suppose the very best practice would be to be quiet and do nothing, except bleeding, which in cases of wounded intestines is seldom necessary.

Specimen 2471 was taken from the body of the Right Honourable the Earl of Bristol. There is a detailed account of the examination and there occurs a partial answer to a question which had probably been in Hunter's mind for a long time past. He says:—

> The gall-bladder was very small, containing no bile, but a transparent slimy mucus. A small gall-stone lay in the beginning of its duct, which obstructed the passage of bile into it. This would hint as if the gall-bladder did not secrete bile.

The few specimens I have shown were not selected on account of their especial value or because they had apparently been objects of extra solicitude and study on the part of Mr. Hunter, but almost for the opposite reason. Indeed, I happened to light on this part of the museum first, and they seemed to me to illustrate so well his ordinary daily work and the method of it. They and the notes which are appended to them exhibit aptly the great qualities of Hunter's mind: observation, comparison, reasoning, infinite patience, reluctance to form too hasty a conclusion, and that best form of curiosity to which we give the name, "seeking after knowledge," which *must* receive an answer and will not rest until it is supplied. These few specimens and the work connected with them would suffice to have made the reputation of a man of science. They form but a drop in the ocean of Hunter's work. Multiply them several hundred times. Multiply the observations, the queries, the experiments in the same proportion, and an idea may then be obtained of the vast amount of work accomplished by Mr. Hunter. Almost all the organs of the body are treated in the same fashion, the organs of the circulation, of respiration, of locomotion, of digestion, of secretion and excretion, of the general and special senses, in all kinds of animals, under conditions of health and of disease.

Take the comparative anatomy of the integuments as it is exhibited in the Hunterian specimens alone, and you will find enough to occupy you for many days and to interest you for many weeks. The varieties of skin in various animals, the tissues which take the place of skin in some animals, the shedding of the skin in serpents, the shedding of the shell in certain fish, the transition from nails to claws, from scattered hairs to fur and feathers, all these things are

exhibited as if there had never been any other investigation in the collector's mind. And all parts of the body which were dealt with seem to have received a like meed of attention and to have been the objects of similar study.

To those who are interested in estimating the amount of work which can be accomplished by one man in the course of 30 years I would recommend, in addition to a study of the Hunterian specimens in the museum, a careful perusal of the descriptions and notes in the catalogues and to read the published works, and Palmer's "Life of Hunter," and to take into account how much of his written work depends on hundreds and thousands of observations and experiments, many of which are, so to speak, only casually referred to in the text. And all this was accomplished by a man who was not by nature disposed to withdraw himself from the amusements and occupations pleasing to other active men; who was neither a recluse nor an ascetic; whose early life had been a life of idleness, spent for the most part in out-of-door pursuits; and who for 30 years before his death was engaged in active and fatiguing hospital and private practice as a surgeon. As a young man he was vigorous and headstrong and during his whole life he remained irritable and passionate and could brook neither interruption nor contradiction. And during the last eight years of his life he suffered from advancing ill-health, which caused him much suffering and increased the natural irritability of his temper. Think, therefore, what restraint he must have put upon himself and what it must have cost him to withdraw himself gradually from every kind of pleasure save that which he derived from his collection and to devote himself to his work, summer and winter, from early morning till late at night, in good health and in bad health, year after year for all those years. Surely, there are few more striking examples in the history of human beings of indomitable pluck and perseverance!

From the year 1735 Hunter's health was broken and he was perfectly aware that his life might be cut short at any moment. Yet there was still so much to be done and he must still work hard at his profession, for he must find money to spend on maintaining and improving his collection. He suffered from anxiety, too, because he had not completed his great work on inflammation, which embodied a large part of the experience of his life, and because the catalogue of his museum was very backward, and he was conscious that the collection would lose much of its value if it were not properly catalogued. He gave up a good deal of his time during the last four or five years to these two objects and was still occupied with them when the end came suddenly, as he had long foreseen. On Oct. 16th, 1793, he was extremely excited and annoyed by certain observations which were made in the course of a meeting in the board-room of St. George's Hospital. He was seized with a violent attack of angina, was conveyed into an adjoining room, where within an hour he expired. Not only had he worked while it was day but he had worked up to the last moment of his life. The night had fallen and John Hunter could work no more. Thus in a moment of passion passed the spirit of a great man, and there were as yet few persons who were conscious that he was a great man and scarcely anyone who realised how great a man he was. Few persons followed him to his tomb. There was no public funeral. No subscription was raised either by his profession or by the public to commemorate his memory or to relieve the pressing needs of his widow and her two children. Yet they badly wanted help, for after Hunter's debts had been paid there remained really nothing for their maintenance. To many persons at this time Hunter's life must have appeared to be a gigantic failure. He had written books and papers which few people cared to read and fewer still could understand. He had been so poor a teacher that while Desault in Paris gathered round him 400 students, Hunter's class seldom numbered more than 20. He had spent all his spare time and ruined his health in making a collection which he declared had cost him £70,000, and no one thought it worth the having. Although he was regarded for some years as the first surgeon in London, his position had not been recognised by the State. Indeed, many members of his own profession regarded him with distrust; they thought him too subject to fancies and theories; he was changeable in his methods and ideas and did not seem to have made up his mind whether to treat an inflamed part with hot applications or cold lotions, and to the last was undecided whether the best treatment for gangrene was wine and bark. He had enjoyed for many years a considerable income and had left his family in destitution. Nor was the opinion of his foreign contemporaries more flattering. Richter declared that Hunter had the art of enveloping useful practical subjects in mere theoretical foam, so that they became quite unintelligible and might easily be regarded as something new. Hebenstreit, who translated his book, regretted his inclination to paradox. And Tode spoke of him as the English theory-smith.

An attempt was made to prevail on the Government to purchase his museum and Mr. Pitt was approached for this purpose. But he would not even take the matter into consideration. Nor can he be blamed for this decision. He was surrounded by difficulties and had no money to spare for science. Even had the funds been available he was not likely to have applied them to this purpose. For he appears to have consulted no less an authority than Sir Joseph Banks, the President of the Royal Society, on the value of the museum from a scientific point of view, and Sir Joseph Banks had expressed the opinion that the collection was not of sufficient importance to the general study of natural history, or indeed to any branch of science except to that of medicine to warrant its purchase by the State! Happily, Lord Auckland and some other distinguished persons took the matter up and persisted with it until Parliament was persuaded to purchase it at a cost of £15,000. But this did not take place until 1799, six years after Hunter's death; and in the meantime the collection had been in danger of being suffered to fall into decay or of being dispersed. It cost money to maintain and already some portions of it had been sold to defray current expenses. We are indebted to the timely help of Lord Auckland and his associates for having preserved it to the nation. Whether it was first offered to our sister College, as Palmer suggests, I do not know. But it is certain that in the course of the same year (1799) it was offered to our predecessors, the Corporation of Surgeons, and to its eternal credit, be it said, the trust was accepted on Dec. 23rd by a unanimous vote of its Council. And to the glory of this College, be it further said that one of the chief objects of generation after generation of our Councils has been not merely to maintain the Hunterian Museum, but to enlarge and perfect it until at this present moment we, the present Council, can exhibit it proudly as the best museum of its kind in the whole world.

Many years elapsed before Hunter's fame became established, and it is not easy to trace the steps or the precise means by which this was effected. That it was accomplished slowly there can be no question. The opening of the museum to the public must have had much to do with it, for those who visited it, among them foreigners of scientific distinction, soon began to appreciate its value. Hunter's works, particularly that on gunshot wounds and inflammation, were more carefully studied, and those who read them could not fail to appreciate the genius of the author even if they found them difficult to follow and were not wholly in accordance with the opinions which were expressed in them. And there was yet another means. Although Mr. Hunter's class was always small it contained a number of young men who afterwards became distinguished. Those of them who appreciated his teaching valued it so highly that his opinions and his name were ever in their mouths. To whatever cause or combination of causes we choose to attribute it, Hunter's renown rose slowly and steadily until the greatness of the man and his services to science were acknowledged in every civilised country in the world, and 60 years after his death the chief fault which Fischer, the German author, could find in his favourite, Richter, was that he was not able to appreciate the worth of Hunter.

There is no machine with which to measure greatness: and if there were one it would have to be made in many different forms. For the qualities and actions which go to make up the greatness of one man would so ill befit another, equally great in his own particular sphere, that the same mould could not be applied to both. There is, however, one test which is generally accepted as evidence of a great mind, whether it be the mind of a ruler, of a philosopher, of a poet, or of a man of science. It is that "deep things should be discovered to him out of darkness"; in other words, that he should see clearly truths which are still hidden to ordinary mortals. And on this test I venture to class Hunter as one of the greatest men that ever entered our profession. Not for the museum which he made, or for his discoveries in physiology and comparative anatomy, or for

the wondrous example of industry and determination which he has bequeathed to us, and certainly not for the improvements which he actually introduced into the practise of surgery, although any of these things would have entitled him to a high place in our esteem, and all of them together would have placed him very high indeed. But because the true relation of surgery to science was revealed to him nearly 100 years before it was so clearly recognised by those who followed him that they were forced to act upon it.

For the first two generations after Hunter's death his memory was held in reverence on account of his wonderful collection, of his contributions to the knowledge of the processes of life in health and in disease, and of the manner in which he himself had applied his knowledge to the practice of surgery. His example served to stimulate a few young men to study physiology and pathology, and in consequence progress was made in both those subjects. It was only natural that those young men who had known him personally and had admired him should imitate him. A kind of "cult" of Hunter is said to have sprung up, and I have no doubt that some of his admirers imitated the roughness of his manner and the freedom of his speech more closely than they did his industry and perseverance. The chair in which Hunter had sat and other of his personal belongings were preserved and still constitute the Hunterian relics which we guard with veneration. In 1819 a Hunterian society which still flourishes was founded in this town. All this was as it should be: it was done in admiration and respect of the life of a very distinguished man. But that life had as yet produced no fruit in its effect on medical education. The rank and file of the profession were little better educated than before, and even those men who occupied the higher walks of medicine and surgery were, with certain marked exceptions, for the most part no better than their predecessors in the time of Hunter. To some persons the foundation of surgery on science was but a happy thought; other persons did not greatly favour it; and to others, again, it was positively obnoxious. Within my own recollection the "practical surgeon," who neither knew nor cared for the scientific side of his profession, still existed. And it will scarcely be credited that one of the surgeons of my own school, illustrious at that time by the teaching and example of Sir James Paget, warned me not to devote too much attention to the study of pathology lest it should interfere with my prospects as a surgeon. Happily, during all those years the views of Hunter had never been lost sight of and slowly fermented in the minds of the leaders of our profession until they found expression in the reform of medical education on the lines which would have been approved by Hunter. It no longer sufficed that the student should be told by the best educated of his teachers that the foundation of medicine and surgery is science. He must himself acquire sufficient scientific knowledge to enable him to practise his profession with safety and success. One by one scientific subjects bearing on the study of disease were introduced into the medical curriculum; until, some 90 years after Hunter's death, those subjects in which he most delighted, and which he regarded as the basis of sound surgery, anatomy, physiology, biology, and pathology, formed a necessary part of the education of every medical student. Not only in this country and throughout Greater Britain is this the case, but it is the rule of all countries which are advanced in civilisation and is carried so much farther in some of them that I am told that candidates for a degree in medicine in the universities of Scandinavia are expected to graduate first in science. Thus the views of Hunter may be said to have found acceptance in all parts of the civilised world.

I venture to think that the founders of this oration (Dr. Matthew Baillie and Sir Everard Home) made one mistake in the conditions which they laid down. The oration ought to be delivered one time by a naturalist, another time by an anatomist, again by a physiologist, and only from time to time by one of us. By putting together the lectures delivered by these various specialists, and in that way alone, could a just appreciation of the genius of Hunter be obtained. But it has been otherwise ordained and we act up to the letter of the law. It thus happens that, as is natural, Hunter's fame as a surgeon is largely the theme of these orations. And yet I regard it as the least of his claims to be handed down to posterity. That he was a good and sound surgeon and a sufficiently good operator I do not doubt, and he introduced several valuable improvements into the practice of surgery. But had his reputation rested on his achievements as a surgeon he would have been handed down to us merely as one of many distinguished surgeons who have helped to advance in some degree the practice of their profession. I scarcely venture to propound such a heresy in this place, but I cannot but feel that had I been a surgical patient during the latter part of the eighteenth century I would as lief have been attended by Mr. Sharp of Guy's or Mr. Pott of St. Bartholomew's as by Mr. Hunter of St. George's. Not because he would have been likely to be thinking of some favourite research on which he happened to be engaged when he was by my bedside, for it was characteristic of him to concentrate all his attention on the matter directly before him, whatever it might be; but because he does not present himself to me as having been a genius in surgery like Paré, or, to come down to later times, like Astley Cooper or Dupuytren. He was such a surgeon as industry and application, with a liking for the work, and great shrewdness and powers of reasoning might make of many a young man with a good eye and a steady hand. My only astonishment, as I read again and again the story of his life and labours, was that he ever found the time in all his multifarious pursuits to carry on the business of a large surgical practice and to rise to the first place as a surgeon in this town. To me it is only another marvel of his character and a sign of how he towered far above other men. It was the only means by which he could earn money and money he must have for his scientific needs. So he stood manfully by the practice of surgery and by directing all his attention to it while he followed it he became, as such a man needs must, the leader of it for the time being.

I have done, Sir, and this lecture must stand as my appreciation of the life of him whom I may speak of as our patron saint. And now that I have delivered it I am ashamed of it, for it seems so poor a tribute to his memory. I accepted the task not too willingly, for I felt that it was beyond my powers. But as this duty is laid on one or the other of us in turn, according to the terms of the trust, we strive to acquit ourselves, at least, in such a manner as shall not disgrace the College and the Trust.

There is only one Fellow of the College to whom I need refer in the obituary which is associated with this lecture, but I should be very sorry to omit all mention of his name. Christopher Heath was a very active and useful member of the Council of the College for many years and became its President in 1895. In 1897 he delivered the Hunterian oration. His books on "Practical Anatomy" and "Minor Surgery" early gained for him a reputation as a teacher, and he retained that reputation throughout his career at University College Hospital. Indeed, he added to it by the directness of his speech and the clearness of his views. I believe he would have attained greater success as a surgeon had he belonged wholly to the pre- or the post-antiseptic period. But coming, as he did, between the two he found it difficult to adapt himself to the altered conditions which the vast change of thought and practice imposed on our profession. Even as it was, he was justly regarded as a leader of surgery in this town and as one of the boldest operators of his day. Those of us who knew him well miss his fine presence and his cheery manner, while the vigour of his speech was always pleasing to us, whether he was on our side or in opposition to our views.

THE ASSOCIATION OF SCOTTISH MEDICAL DIPLOMATES: ANNUAL DINNER.—The annual dinner of the Association of Scottish Medical Diplomates will be held on Friday, March 1st, under the presidency of Sir J. R. Andrew Clark, Bart., C.B., at the Trocadéro Restaurant, Piccadilly-circus, London, W., at 7.15 o'clock for 7.30. A limited number of small tables will be provided for members bringing parties of guests. Tickets, 10*s.* 6*d.* each (exclusive of wine), may be obtained from the honorary secretary, Dr. E. N. Féré, 11, Chandos street, Cavendish-square, London, W.

A FORTY PER CENT. MORTALITY AMONGST CHILDREN.—The medico-sanitary situation in Lapland appears to be ominous. A series of reports shows that the population of the extreme north of Russia is almost devoid of medical assistance, so that the local industries are deprived during long periods of many workmen, resulting in a continuous decline of output. The mortality amongst children is most striking, amounting in some localities to 40 per cent. It is not stated if this figure relates to infants under one year only, but presumably it does.

ABSTRACT OF

The Milroy Lectures

ON

KALA-AZAR, ITS DIFFERENTIATION AND ITS EPIDEMIOLOGY.

Delivered before the Royal College of Physicians of London

BY LEONARD ROGERS, M.D. LOND., F.R.C.P. LOND.,

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LECTURE I.

Delivered on Feb. 21st.

THE ORIGIN AND COURSE OF THE EPIDEMIC.

MR. PRESIDENT AND GENTLEMEN,—I regard my good fortune in being appointed to deliver the Milroy lectures this year as being due to a desire on the part of this College to recognise the work now being done in the investigation of tropical diseases. My responsibilities are, therefore, unusually heavy, while my difficulties are enhanced by the disease I have to deal with being unfamiliar in this country, although this is to some extent counterbalanced by the great interest and importance of the subject. I will, therefore, commence with an extended definition of the disease embracing the main points I shall deal with much in the order in which they will be taken up.

Kala-azar, then, is the epidemic manifestation of a fever, endemic in extensive areas of India, which has spread slowly for 30 years up the Assam valley as a wave of greatly increased mortality, dying out largely as it passes on, after causing a decrease in the population and the falling out of cultivation of much land in the affected tracts, travelling along lines of communication, and checked by high elevations and extensive areas of unpopulated jungle, and now, happily, largely on the decrease. It is precisely similar in nature to a previous epidemic in Bengal, known as the Burdwan fever. Cases of the epidemic disease are identical, when individually considered, with the sporadic fever known for centuries in India as "malarial cachexia," and it is characterised by very persistent fever of an alternating remittent and intermittent type, commonly mistaken for typhoid fever in the earliest remittent stage, but rapidly leading to a cachectic condition with great enlargement of the spleen, and later of the liver, and extreme wasting, the fever lasting from a few months to several years and commonly terminated by some complicating affection, the mortality being from 96 per cent. at the height of the epidemic down to 75 per cent. at its end. The disease in its progressive stages is constantly associated with, and pretty certainly caused by, a minute protozoal organism, which has been shown by a remarkable cultivation outside the body to be one stage of a flagellated parasite, while a study of the conditions most favourable to this development of its extra-corporeal stage strongly indicates some biting insect as the carrier of the infection, a view which is also in accordance with a number of facts regarding the spread of the disease and the success which has attended efforts to check its further extension and to stamp it out of infected places which were made before the discovery of the parasite and also recently confirmed by certain feeding experiments.

To-day I propose to deal solely with the subject in its epidemiological aspects, taking it up as a disease individually considered in the second, and describing the life-history of the parasite and its bearing on the mode of infection in my third lecture.

THE ORIGIN OF THE EPIDEMIC.

Kala-azar first attracted public attention in 1882, when Dr. Clarke, the Sanitary Commissioner with the Government of Assam, in his annual report gave an account of the disease, based on the notes of 120 cases compiled by Mr. J. McNaught, the civil medical officer of the Garo hills. He described it as a very severe form of malarial cachexia which was depopulating certain areas at the foot of the Garo hills, believed by the Garos to be infectious, and obtaining its name from a peculiar dusky hue which the sufferers presented, the term meaning "black fever." The disease had been known there in its sporadic form since 1869, when the country was first occupied by the British, but the exact date of the origin of the spreading epidemic was obscure when I went to Assam in 1896. I therefore visited the Garo hills to examine all the medical and administrative records and ascertained that the Government land rent was paid in full up to 1875, when it was recorded that a deficiency occurred in some of the villages at the south-west corner of the district owing to several families having died from kala-azar, and from this time onwards it was regularly referred to year by year as causing the deaths of a large proportion of the people of various villages, thus occasioning a loss of revenue and the depopulation of certain areas at the foot of the hills just to the east of the Brahmaputra river. By 1881 numerous villages had quite disappeared, while the epidemic had travelled towards the centre of the hills, and then passed by a bridle path out again to their foot on the north side to reach Damra in the south of the Goalpara district. It is clear, then, that although the disease had doubtless long been present in a sporadic form at the western foot of the Garo hills, just as it is known to have been in the Rungpore district on the west of the Brahmaputra river, yet it was not until about 1875 that it assumed the epidemic spreading form, depopulating tracts of country and immediately causing a marked loss of revenue—characteristics which it maintained during its subsequent spread up the Assam valley during the succeeding three decades.

Moreover, about 1875 the disease also appeared in an epidemic form in a village to the south of Dubri, some 50 miles north of the above-mentioned place of origin, a distance which it subsequently took about five years to traverse, and it is worthy of note that these two places were each situated close to where a ferry crossed the river from Rungpore, while in two of the earlier reports on the disease it is stated that the Garos themselves asserted that the epidemic came from Rungpore. Now between 1871 and 1879 there was a terrible outbreak of fever in the Rungpore and in the neighbouring westernly Dinajpur districts, which was noted in 1875 as especially affecting the low banks and islands of the Brahmaputra river (so doubtless also involving the foot of the Garo hills) and causing a decrease in the population of Rungpur between the censuses of 1872 and 1881, against a marked increase in Bengal generally. This fever outbreak was coincident with an unprecedented series of five out of six years of deficient rainfall, while to this day short rains are always accompanied by excessive fever mortality in that part of Bengal, so that there can be little doubt that the epidemic was caused by this extraordinary succession of unhealthy seasons, which I suggested in my original report intensified the ordinary malarial fever of the district until it assumed a spreading epidemic form. The explanation of the phenomenon in accordance with the now known pathology of the disease I must leave until the life-history of the parasite has been discussed.

THE SPREAD OF THE EPIDEMIC.

The details of the spread of the disease have been embodied in the accompanying map of Assam (Diagram I.), the large figures, such as 75–83 in the Garo hills, showing the years during which there was a marked increase in the fever death-rate in each of the affected districts, while the smaller separate ones illustrate the exact year in which the disease was noted to have commenced in that particular place. It is noteworthy that the southern higher portion of the Garo hills largely escaped the epidemic, while, although the disease first appeared at the extreme south-west of the hills, yet it never spread along the southern border into the thickly populated tracts of Mymensingh and Sylhet, the explanation of which will appear presently.

Coming next to the Goalpara district, we find that the large sparsely populated portion to the north of the Brahmaputra river was very little affected. On the other hand, the narrow southern terai tract between the river and the Garo and Khasai hills, traversed by the grand trunk road from opposite Dubri to the headquarters of the Goalpara and on through the southern portion of the Kamrup district to the large town of Gauhati, suffered very severely. Goalpara was at its worst between 1882 and 1887, relief works being started there in 1884, the disease being still reported to be only malarial in nature and certainly not contagious, while as early as this it was stated that "the epidemic is extending, counterbalanced by the fact that it is now absent where it has been severe." Moreover, in 1886, it was

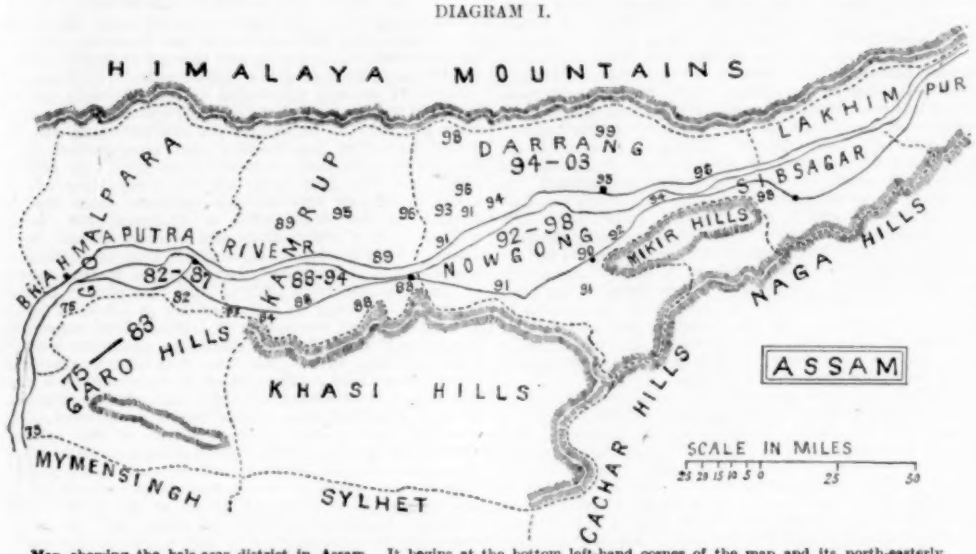
recorded of a tract in the Garo hills, some 70 miles in extent, which had suffered most severely from the disease, "It would be hard to find one single case of the real disease, kala-azar." It is clear from this that the decline of the epidemic is just as marked a feature as its rapid rise in any district.

In the meantime the southern portion of Kamrup was invaded and some of the villages on the north bank of the great river gradually became infected, about ten miles of new country being invaded each year, where communications were good, while the disease leapt on into the town of Gauhati in 1888, in accordance with the more active intercourse between that place and the infected villages than with some of the intervening and later infected hamlets. On the north bank the spread was less rapid in accordance with the slighter degree of active intercourse between the more scattered villages of that tract, there being no much frequented main road on the north bank of the river. Once Gauhati became severely infected, the disease spread across the river by a main road into the westernly Mangaldi subdivision of the Darrang district, and at the same time it continued its steady eastward course along the trunk road into Nowgong district, leaping on once more into the town of that name in 1890.

ankylostomiasis." This identity of the clinical pictures can only be explained by Dr. Giles having rejected the typical cases of kala-azar as being merely "the common malarial cachexia of Assam" and only regarded cases of ankylostomiasis as the true cause of the increased mortality, that is, kala-azar as he saw it. Unfortunately, he did not examine the healthy people for the intestinal parasite, so when soon after his report appeared Dr. Dobson showed that 80 per cent. of healthy coolies imported from various parts of India, who had passed two medical examinations, harboured this worm, Dr. Giles's theory received a fatal blow, and in 1896 a fresh investigation was ordered, which I was fortunate enough to be selected to carry out.

In the course of a year's study I found that the ankylostomes were no more common in any stage of kala-azar than in the uninfected people, while the anæmia produced by this worm was of a chlorotic type and differed so widely from the pernicious type met with in kala-azar as to alone serve for the complete separation of the two diseases, thus finally disproving Dr. Giles's theory. Moreover, I found malarial parasites frequently present in all stages of the disease, a complication now readily explained by the then unknown fact that in very malarious places a large proportion of the healthy persons show malarial parasites in their blood, for on

DIAGRAM I.



Map showing the kala-azar district in Assam. It begins at the bottom left-hand corner of the map and its north-easterly extension is marked by the numerals which denote the year of its first appearance in each locality.

In the meantime attention had been called in Ceylon to the amount of anæmia produced in coolies by the ankylostomum duodenale, and Dr Ruddock had also found ankylostomiasis to be common in Assam, where it was readily cured by thymol. Dr. G. M. Giles was therefore sent to Assam late in 1889 to investigate both kala-azar and anæmia of coolies, and rapidly came to the conclusion that they were one and the same disease and caused by the ankylostomes, and he reported to this effect in 1890. He found, indeed, that many of the cases showed symptoms of malarial poisoning, but as enlarged spleen was very common in healthy people in Assam he considered that "it is obviously absurd to attach any pathognomonic importance to the symptom in connexion with the etiology of kala-azar," and after studying anæmia of coolies in the eastern part of the valley, where there has never been any kala-azar to the present day, he wrote, "Nothing here struck me so strongly as the absolute identity of the clinical pictures presented by these cases of acknowledged ankylostomiasis with those I had been seeing so much of under the name of kala azar," and he therefore concluded that, although malaria causes much death-rate in Assam, there had been no changes in the country which could intensify it, and "it is entirely inadequate to serve as the efficient cause of the terrible death-rate of kala-azar stricken villages, and the true cause of this will be found to be neither more nor less than

revisiting the Nowgong district in 1904 I found the endemic index, or percentage of healthy children with malarial parasites in their blood, no less than 80 on some of the very tea gardens where I had studied kala-azar in 1896 Further, I was unable to find any differences between kala-azar and malarial fever in any stage, malarial pigment being almost constantly found in the organs of kala azar subjects post mortem, while the typical cachetic later stages of kala-azar was identical with what has been known as "malarial cachexia" for centuries in Lower Bengal (but which we now know to be not all malarial but for the most part the sporadic form of kala-azar). I was therefore compelled to conclude: "The disease, then, is a very intense form of malarial fever," adding, "It is open, however, for anyone to say that there is something in the disease in addition to malaria, which I have not discovered, but which accounts for the spread of the infection." The mode of extension of the disease was also carefully studied and I was enabled to make some practical suggestions, the success of which has exceeded my most sanguine expectations, as will appear later. My view was largely accepted in Assam, although some still thought it was a new disease, but the difficulty in regarding malaria as infectious largely vanished when Ronald Ross's classical researches on the communication of malaria through the mosquitos were published and still more when this great authority on

malaria, after a personal investigation of kala-azar in 1899, indorsed my opinion and after a careful discussion concluded, "I think, then, with Rogers, that kala-azar is malarial fever."

To return to the progress of the epidemic, we now arrive at a critical point, for the disease had reached the beginning of a narrow tract with but few inhabitants between the low Mikir hills and the Brahmaputra river, which stretched for some 40 miles before opening out again into the broader plain of the Golaghat sub-division of the Sibsagas district. I travelled through this country and found it to be still free from the dreaded kala-azar, but people from the infected tracts of Nowgong were already beginning to move towards Golaghat, and if nothing were done it could only be a matter of time before the open, more populated upper Assam valley became infected and the most favourable opportunity which had yet occurred of staying the epidemic would be lost for ever. I therefore strongly urged in my report that infected persons should be prevented from traversing this area and gave instructions for dealing with any villages which might become infected, and these measures were promptly put into operation by Sir Henry Cotton.

The subsequent history shows a steady decline in the prevalence of the disease, with the exception of slow extension in the already infected Darrang district north of the Brahmaputra river, although, owing to the population being much scattered in this, as in all the northern districts of the Assam valley, its ravages have been less here than in the Nowgong and earlier infected parts. In 1898 the fever death-rate began to decrease in the Nowgong district, while an inquiry showed that it had not yet advanced into Sibsagas, and "precautions had been taken to treat all suspicious cases at the frontier, and check the further advance at the outset." These measures have proved eminently successful, for although a small outbreak did actually occur in 1899 on the borders of Golaghat, the cases were promptly isolated, the epidemic never gained a firm foothold in this district, and no increased fever mortality has appeared there, while the marked decline of the epidemic in Nowgong during the next three years has now largely removed the danger of its further spread eastward. In 1901 the disease is said to have nearly died out of Goalpara and Kamrup, while parts of Nowgong were quite free, and only chronic cases were to be seen in the rest of the district. In the following year very little of the disease remained even in the Nowgong district, although it still continued in scattered villages in Darrang, but showed little of its original powers of extension.

In 1902 the medical profession in India were startled by yet another theory concerning the nature of the disease, for Dr. C. A. Bentley, of the Darrang district, announced that kala-azar was nothing but an "epidemic Malta fever," on the strength of serum reactions in 75 per cent. of a small series of cases in dilutions of only 1 in 10 to 1 in 40 obtained at the Kasauli Institute, although in a previous series he had sent to me, as cases resembling Malta fever, I had not been able to obtain any positive reactions. Further observations which I made with the Malta fever organism kindly supplied me by Colonel D. Semple, R.A.M.C., of Kasauli, showed that reactions in the low dilutions mentioned could occasionally be obtained with the blood of other diseases than Malta fever, and it has since been acknowledged officially that such low dilutions as had been employed in the kala-azar tests were of no diagnostic value, while Dr. Bentley has now recanted his theory.

In 1897 a great increase of the fever mortality occurred in Sylhet, to the south of the Khasai hills, following on the marked physical alterations in the district caused by the great earthquake, but two years later it had fallen again to nearly the normal, and has been very low again during the last few years, showing that there was no such prolonged wave of increased fever mortality as occurred in the kala-azar infected parts of the northern Assam valley just described. Nevertheless, the temporary increase of fever in Sylhet gave rise to inquiries, and it was reported in 1900 that kala-azar was widespread in the district, although a perusal of the reports shows that the disease was only of a scattered sporadic nature. Now in 1897 I had visited Sylhet for the purpose of seeing "malarial cachexia" in a district free from epidemic kala-azar and found a few cases, which, individually considered, were identical with the outbreak I was investigating. Indeed, it was the very close resemblance between the sporadic cases always known as malarial cachexia in Sylhet and Lower Bengal with those of the Assam epidemic which forced me to the conclusion that the more serious spreading affection was but an intensified form of the sporadic "malarial cachexia," and this view is now seen to be correct, with the all-important modification introduced by the epoch-making discovery of the parasite of kala-azar—namely, that the great majority of the cases hitherto known as malarial cachexia in Lower Bengal, as well as in Madras, are not malarial at all but due to the recently discovered parasite of kala-azar. This occurrence of the sporadic form of the disease in Sylhet, as well as in Mymensing in Eastern Bengal, also serves to explain why the epidemic disease did not spread to those districts but passed round the north side of the Garo hills into the virgin soil of the Brahmaputra valley, previously free from the sporadic disease, and finding there a population fully susceptible to its deadly influences it there worked the most terrible havoc. It thus becomes clear that unceasing vigilance must continue to be exercised against the insidious extension of the disease into the still unaffected eastern portion of the Brahmaputra valley as long as it lingers in Darrang, while a careful watch must be kept to enable prompt measures to be adopted should any further unhealthy seasons originate a fresh outbreak in the same way that the epidemic was started at the foot of the Garo hills in 1875.

THE EFFECT OF THE EPIDEMIC ON THE FEVER DEATH-RATE AND ON THE POPULATION.

I have now traced the course of the epidemic, but in order to convey a more definite idea of the disastrous effects of the fever wave which has spread through some 300 miles of the Assam valley during the last 30 years I have prepared Diagram II. showing the annual number of deaths returned as due to fever in each of the districts traversed. The death-rates per 1000 of population are also shown in the dark dotted lines, but they present some irregularities due to their being calculated on fresh census figures in 1890 and 1900. As the death-rates for the Garo Hills are not available at the time of the outbreak there the first district to be dealt with is Goalpara, the smaller southern part of which alone was severely affected by the disease. Only the figures for the whole of the district are available, but, nevertheless, they show the marked increase of the fever-rate from 1883 to 1888, followed by a steady decline, only broken by increases due to influenza in 1891 and to famine and earthquake in 1896 and 1897 respectively. Coming next to the Kamrup district we again find a marked fever mortality wave a little later than that in Goalpara—namely, from 1888 to 1894—followed once more by a steady fall, except for the later unhealthy years already mentioned, to reach much the same rate as before the outbreak, clearly revealing how definite is the decline of the epidemic, although it doubtless leaves behind it some sporadic cases of kala-azar. It is not, however, until we come to the Nowgong district, the whole of which was swept through by this deadly fever, that the full magnitude of the disaster in such a thinly populated country as Assam is clearly seen. Beginning to suffer severely in 1892, when Kamrup was past its worst, the fever death-rate rose by leaps and bounds from an average of about 4000 a year previously to that year up to over 14,000 in 1897, and then declining still more rapidly to under 6000 in 1900 and to an average of about 4000 once more during the last five years. The apparent completeness of this fall, however, is partly due to the frightful depopulation of the district by the epidemic, for the death-rate per 1000 during the last few years averaged about 15·5 against 13 before the outbreak. The broken line in the Nowgong diagram indicates the birth-rate per 1000, and shows a marked decline during the height of the epidemic, as might have been expected, and this helps to explain the great decrease of the population to be mentioned presently.

Next we come to Darrang, which shows a less accentuated but more prolonged wave of increased fever mortality, due to the slower spread of the disease through this extensive and lightly populated district. Much of the increased number of fever deaths here shown, however, is due to a rising population from the extensive immigration to the tea-gardens, for on turning to the fever death rates per 1000 we find that the kala-azar wave extended from 1894 to 1899 (that of 1892 having been due to influenza) during which the rate rose from 20 to 30 per 1000, falling again to an average of 23 during the last six years, a rate which is still above the average of 18 per 1000 before the invasion of kala-azar; indicating a lingering of the disease in the last affected eastern portion of the district, which still, to some

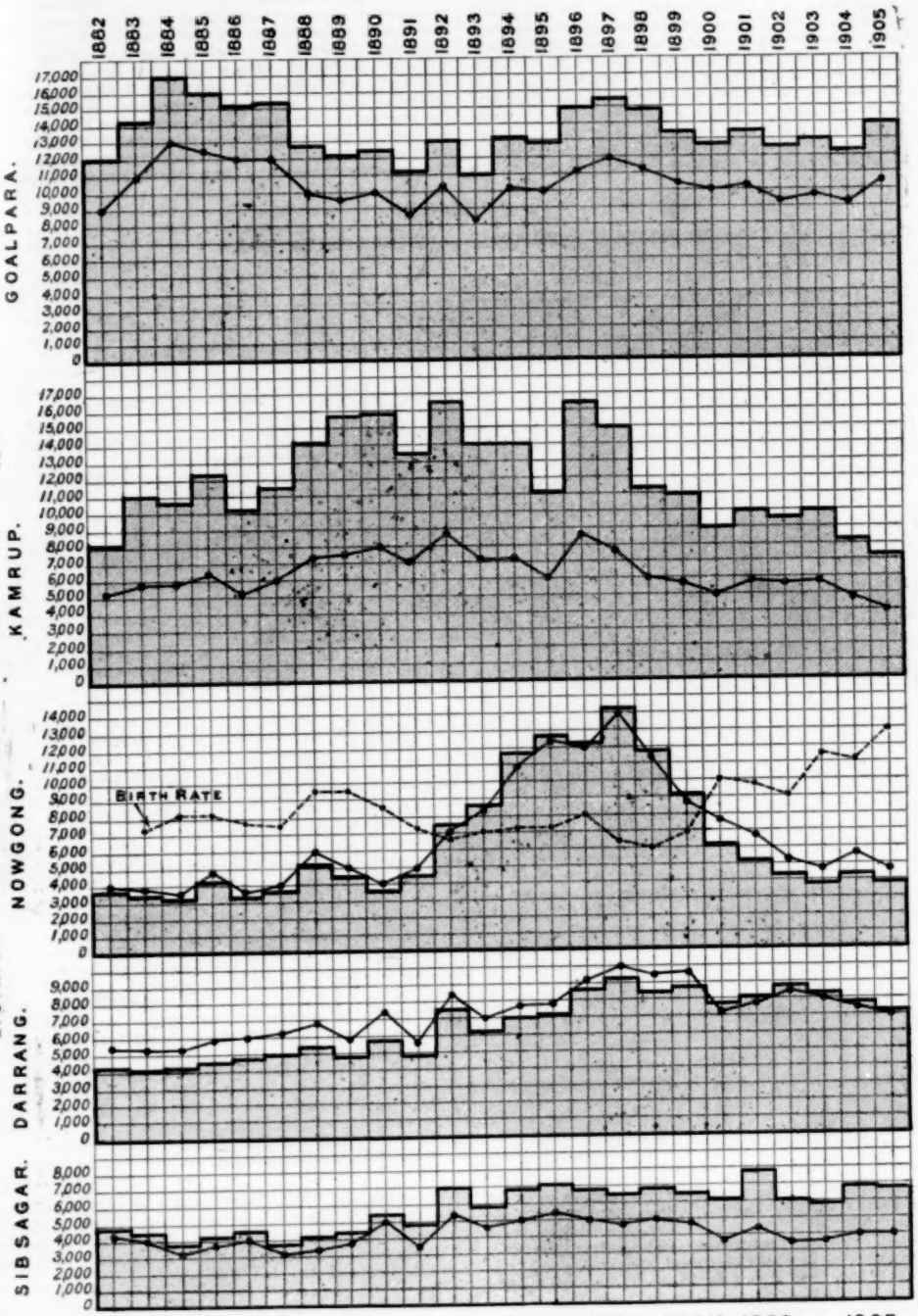


DIAGRAM II. DISTRICT FEVER DEATH RATES FROM 1882 TO 1905.

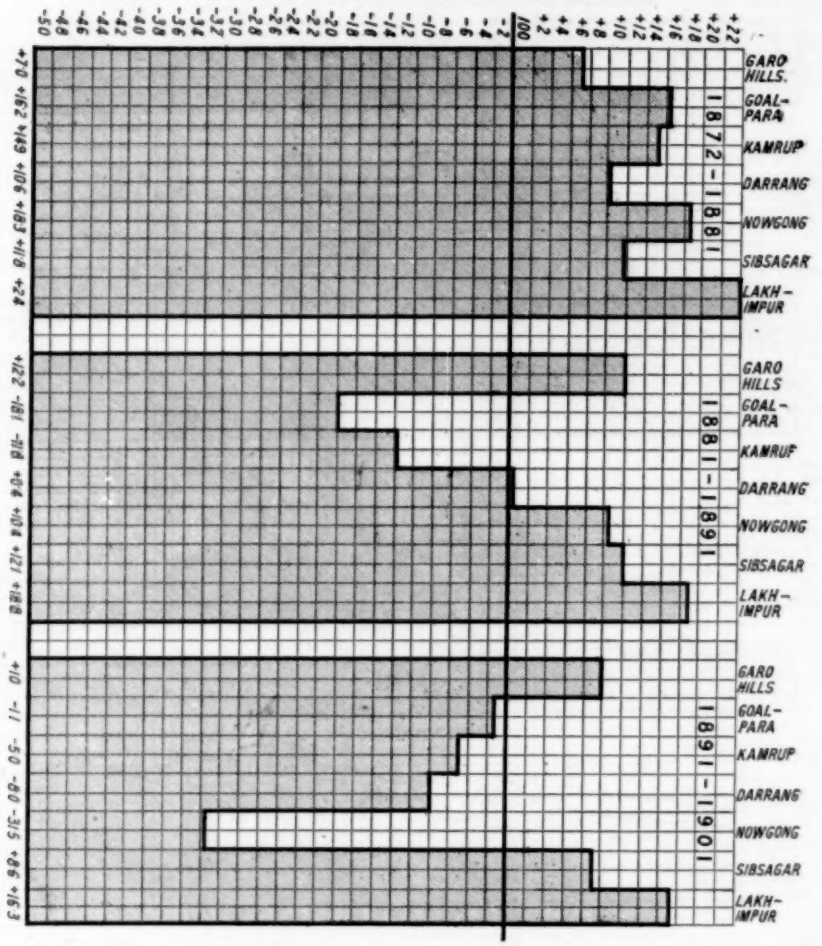
extent, threatens the more eastern Sibsagar and Lakhimpur divisions.

In the lowest part of the diagram the fever rates of the Sibsagar are given, the increase in the total number returned being solely due to increase of population, for the death-rate per 1000 is much the same now as it was 30 years ago, which demonstrates that there has been no wave of increased fever mortality in this district such as occurred in the kala-azar-infected tracts and proves beyond doubt the success of the measures I advocated for preventing the devastation of this and the Lakhimpur division, containing a most important part of the Assam tea industry.

Diagram III. shows the effect of the disease on the population of each district as revealed by the figures of the

DIAGRAM III.

CENSUS INCREASE OR DECREASE OF DISTRICT POPULATIONS.



and Kamrup and began to invade the western Mangaldai sub-division of Darrang. The unshaded portion below the line marked 100 shows the decrease of the population of the Goalpara subdivision in this decade to have amounted to no less than 18·08 per cent., against an increase during the same time in the unaffected northern part of the district of 19·36 per cent., which Mr. Gait, the Census Commissioner, estimated to mean that the "ravages of kala-azar are chiefly responsible for a reduction of 29,699 persons" in this subdivision. Again, in Kamrup there was a decrease of 1·6 per cent. in the same decade, against an increase of 14·9 per cent. in the previous nine years, which Mr. Gait calculated meant a loss of 75,000 persons from the disease. Here once more the decrease on the southern or badly affected part of the district was 12 per cent., against an increase of 2 per cent. on the north bank of the river. Darrang shows a stationary population during this period, against an increase of 10 per cent. in the previous one, this absence of increase being due to the invasion of Mangaldai.

last four censuses, and speaks still more eloquently as to the terrible results of the disease. The variations in the indigenous population of each district, after allowing for immigration and emigration, during the last three decades is shown in the order in which they were attacked from left to right. The first part shows but a slight increase of the population in the Garo hills between 1872 and 1881, during part of which period the epidemic was present there. On the other hand, the remaining districts revealed a marked increase varying from 10 to 24 per cent.

The second part illustrates the variations in the population of the same districts between 1881 and 1891, during which kala-azar overran the southern parts of Goalpara

The third part shows similar figures, for from 1891 to 1901, during which the population of the Goalpara district was practically stationary, Kamrup showed a loss of 5 per cent. and Darrang 8 per cent. of its people. During this decade Nowgong felt the full force of the epidemic and its truly appalling nature is revealed by the fact that in these ten years, instead of an increase of 10 per cent. as between 1881 and 1891, there was actually

a decrease of 24 per cent. in the total population of the district, or, if the indigenous population alone be considered, the loss amounted to no less than 31·5 per cent., or almost one-third of the people, a death-rate which far exceeds that of the recent plague and to which it would be difficult to find a modern parallel, unless it be that of the closely allied sleeping sickness of Africa. On the other hand, Sibsagar and Lakhimpur again showed a substantial increase of the population, after allowing for immigration, indicating once more that this part of the valley was still unaffected by the disastrous fever. Moreover, the land has fallen out of cultivation in proportion to the loss of their inhabitants, for some figures kindly supplied me by Mr. Gait showed that one-fourth of the land in the affected parts of the Mangaldai was abandoned within five years and one-fifth of Nowgong within a similar period of time ending 1895 before the outbreak had nearly expended itself there, while no less than 54,179 persons were estimated to have died from kala-azar in this district within nine years. I myself frequently saw patches of grass jungle springing up in the midst of rice fields and on inquiry always found that it had belonged to some family which had been exterminated by kala-azar shortly before, no one being left to till the land, which had also lost its value completely, as there was no demand for it. Happily, this particular outbreak appears to be practically at an end, but it behoves us to study it carefully, so as to be prepared to check at its outset any future epidemics which may arise and also to inquire into any previous ones of a similar nature, from which further lessons of value can be learnt.

THE BURDWAN FEVER EPIDEMIC OF LOWER BENGAL, 1856–1873.

When studying the literature of kala-azar I was struck by the similarity of its main features to those of a previous fever outbreak in Lower Bengal, known as the Burdwan fever, from the name of the division it chiefly affected, and a close examination of the records of the latter disease convinced me that the two epidemics were of the same nature, although independent of each other, so that kala-azar of Assam is not an isolated phenomenon. I have dealt with this Bengal fever elsewhere, so need only now recall its main features. It began in Jessore to the east of Calcutta, where it reached its height in 1854–55, and then began to spread to the east through Nadia in 1857 to 1864, while in 1862–63 it invaded the Burdwan division, in which its course was carefully traced in a very excellent report of 1872 by Dr. J. Jackson, the sanitary commissioner of Bengal. He pointed out that it spread along roads and lines of communication and was checked by the absence of ready intercourse between different villages. Further, it ultimately stopped when it reached the edge of the alluvial soil, as it failed to get a firm footing on the drier laterite formation and in the hill tracts of Chotta Nagpur; just as kala-azar was limited by the higher hills surrounding the Brahmaputra Valley. Owing to the density of the population of the affected parts it is said to have carried off no less than a quarter of a million people in the Burdwan division alone and it converted this previously very healthy district into a still notoriously feverish place. The exact nature of the disease gave rise to almost as much controversy as its Assam prototype, the question of its contagiousness especially being warmly debated. Dr. Jackson concluded: "While I believe the fever to be malarious in origin, and to have some malarious characteristics, I believe it to be not a simple but a contagious malarial fever; that is probably typho-malarial, and that it was not produced in Burdwan but imported." I have recently found the parasite of kala-azar in some sporadic cases of the disease from Burdwan, so this outbreak seems to have permanently left behind it the endemic affection.

Kala-Dukh.—Another smaller outbreak of a similar nature, described by Major E. H. Brown, I.M.S., in 1898, occurred in the north-east of the Purneah district, immediately adjoining Dinajpur, and hence doubtless an off-shoot of the great Rungpur-Dinajpur fever outbreak, which gave rise to kala-azar in Assam. Kala-dukh depopulated a number of villages in the Nepaul teral, but when I visited the place in 1904 it had nearly completely died out, only a few chronic cases remaining, while in the neighbouring part of the Dinajpur district there were fairly numerous sporadic cases of the disease, in some of which I found the parasite of kala-azar, thus establishing the identity of this small outbreak with the more extensive ones already described.

I have now completed my survey of the subject from the epidemiological point of view, having treated it in considerable detail, because I think the vast economic importance of these terrible spreading fevers is not yet fully realised out of India, and the necessity of clearly distinguishing between the epidemic and the sporadic forms of the disease cannot be too strongly insisted upon. The two disastrous outbreaks I have described both occurred within the last half century, their spread being conceivably assisted by improved communications in the affected tracts, especially in Assam, and as it is impossible to say when a fresh epidemic may be started we must be on our guard against them, for of no disease is it so true that knowledge is power, as I shall hope to show you in the course of my remaining lectures.

The Lettsomian Lectures

ON

THE DIAGNOSIS AND LOCALISATION OF CEREBRAL TUMOURS.

Delivered before the Medical Society of London,

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LECTURE II.[1]

Delivered on Feb. 18th.

MR. PRESIDENT AND FELLOWS,—We will take next the region of the cortex which is situated in front of the ascending frontal convolution and comprising the superior, middle, and inferior frontal convolutions. With the exception of the posterior part of the middle frontal convolution, where, as we have already seen, electrical stimulation produces conjugate movement of the eyes to the opposite side, this part is inexcitable to electrical stimuli. We can therefore divide this region into two parts, an anterior and a posterior. Professor Hitzig and Dr. D. Ferrier have shown in their experiments made over 30 years ago that removal of the frontal lobes in dogs and monkeys produced a decided alteration in the animals' character and behaviour. They remained apathetic or dull and had lost the faculty of attentive and intelligent observation. In tumours of the frontal region this stupidity and want of attention is, as we shall see, a very marked symptom and it seems to be present mostly with tumours of the anterior half of the frontal region.

TUMOURS OF THE FRONTAL REGION.

In the frontal region, besides the tumours which are found in the cortex, there are on the one hand tumours which grow from the bones or the dura mater covering them, and especially from the orbital plate. These tumours are outside the brain substance and compress the brain, but they do not involve its tissues. They are therefore most favourable for removal. On the other hand, there are tumours which grow inside the white matter of the frontal lobe and which either do not reach the cortex or only come to the surface and involve the cortex at one spot. We have therefore: 1. Tumours outside the brain. 2. Tumours growing in the cortex on the outer surface and situated in (*a*) the anterior half or (*b*) the posterior half of the three frontal convolutions. 3. Tumours growing within the white substance of the frontal lobe.

Of the first class a very typical case was the following. A woman, aged 37 years, was admitted under my care on Dec. 18th, 1903, into the National Hospital. The onset occurred seven months before admission with headache in the frontal region two or three times a week, then every day; when she had headache she was very drowsy and it was associated with vomiting lasting an hour. For two months she had had sleepy attacks in which she became drowsy; this deepened into coma so that she could not be awakened and she would sleep for days, then the sleep gradually passed off.

[1] Lecture I. was published in THE LANCET of Feb. 9th, 1907, p. 343. Lecture III. will be delivered on March 4th.

The lucid intervals became very short. Mental power had gradually become worse. Three months ago she had difficulty in walking, her legs gave way and she would fall down; sometimes this was preceded by a reeling gait. Occasionally she complained of giddiness. For two months her speech had been difficult, she would drop words, she had difficulty in answering questions properly, and sometimes would speak nonsense. For the last six weeks her speech had been unintelligible. For three months her sight had been impaired. For two months she had had drooping of the mouth on the right side and weakness of the right arm and leg and a tendency to fall to the right when standing. For six months she had had incontinence of urine. On admission she was very drowsy and did not take any interest in things around her. Her answers came very slowly but fairly intelligently. The sense of smell was impaired on the left to all qualities of odours; it was normal on the right. Her vision was impaired. She had double optic neuritis; the right disc was more swollen than the left. Ocular movements were normal. Slight weakness of the right upper and lower limbs was present. She could walk fairly well but had a tendency to drop to the right. All the deep reflexes were brisk and increased on the right. The epigastric and abdominal reflexes were less marked on the right than on the left; the plantar reflex on the right was a doubtful extension of the big toe and flexion on the left. She had incontinence of urine and when remonstrated with seemed to be sorry about it, but it occurred just the same. There was a fine rapid tremor of the left hand when both hands were extended in front of her. The tumour, which was removed by Sir Victor Horsley, grew from the left orbital plate on its outer side and compressed the brain upwards and outwards. The tumour measured 3¼ inches from before backwards, 2½ inches transversely, and 2 inches from above downwards. It did not grow into and involve the brain substance and there was therefore no destruction of brain tissue, and this would account for a complete recovery, as she is at the present time, three years after, quite well and able to get her living.

The case just described is a very good instance of an extramedullary tumour growing from the orbital plate and compressing the brain. The general diagnosis of a tumour was made from the symptoms of headache, vomiting, and double optic neuritis. The localisation to the left frontal region was made by the following symptoms. The pain in the head was in the frontal region; the mental condition of stupidity and dulness, the attacks of coma from which she could not be awakened and her condition of want of interest in the interval between these attacks; and the incontinence of urine. I drew attention some nine years ago in opening a discussion on cerebral tumours at the Neurological Society to the frequent occurrence of this last symptom in tumours of the frontal lobe. I now think it occurs also in tumours of the temporal lobe, as has also been found by Dr. T. Grainger Stewart in his paper on the Diagnosis and Localisation of Tumours of the Frontal Regions of the Brain,[2] but it does not occur, as a rule, with cerebellar tumours. In the present case the incontinence was associated with the depressed mental condition, and the interesting point is that on the very day of the operation, when the pressure was relieved by removal of the tumour, this symptom completely passed away and the patient was able to hold her urine. That this symptom is due to stupor is not always the case, as sometimes patients with frontal tumours are bright and apparently intelligent, but they have this symptom of incontinence of urine without a sufficient amount of stupor to account for it.

The other symptoms which helped to localise the tumour on the left frontal region were: 1. The impairment of smell on the left side as compared with the right. Now the sense of smell may be lost on both sides in intracranial tumours, as the result probably of extreme pressure. It is then of no localising value. But when smell is lost or impaired on one side, and especially if it is a matter of recent date, it is a most valuable sign when associated with the general signs of tumour and with mental changes. 2. The slight paresis of the right arm and leg. 3 The increase of the deep reflexes (wrist tap, knee-jerk) in the arm and leg on the right side as compared with the left and diminution of the superficial reflexes, abdominal and epigastic, on the right side. The plantar reflex gave a doubtful extension of the right big toe as compared with the definite flexion of the left toe. The paresis of the right side with increase of the deep reflexes and diminution of the superficial reflexes are the common symptoms of a slight hemiplegia, and in this case would doubtless be caused by the general compression by the tumour of the pyramidal tracts of the left side and thus pointing to a lesion of the left hemisphere. 4. Fine rapid tremor of the left hand, when both arms were extended in front of her. This is a symptom which was first observed in these cases of frontal tumour by Dr. Grainger Stewart from cases observed at the National Hospital and published in a paper in THE LANCET.[3] It is particularly to be noticed that the tremor takes place in the same side (the left) as that of the situation of the tumour and is not, like the paresis, in the opposite side. Dr. Grainger Stewart has called especial attention to the absence, diminution, or easy exhaustion of the superficial abdominal reflexes on the opposite side and to this tremor on the same side as the frontal tumour. The tremor on the same side as the tumour he found to be present in all of the 22 cases which he had examined in the National Hospital except two, in which the patient's condition prevented examination. In five cases out of the 22 tremor was observed on both sides, but in all it was more constant on the side of the tumour. Of these five cases where bilateral tremor was observed, in two cases necropsy revealed the presence of tumours in both frontal lobes.

The next case, a patient, aged 41 years, under the care of Sir William Gowers, was operated on by Sir Victor Horsley, who removed a flattened oval tumour, an endothelioma, from the left frontal lobe. It was lying basally on the left orbital plate and apparently attached to the dura mater. It measured 1½ inches by 1½ inches by ¾ of an inch. The patient had syphilis six years ago. For six weeks he had had attacks of vomiting in the early morning. For two months he had had daily headache behind the eyes, on the vertex or general. Six weeks ago he had fainting attacks; he had had them as a boy but was free from them till six weeks ago. In these attacks he had a feeling of swooning, as if he were dying or passing away, and of swimming of objects, but in no definite direction, then he fell down and was unconscious for ten minutes but not convulsed. There was no limb weakness after these attacks. Mentally he had been irritable but not forgetful. For two or three months he had hesitated in conversation and had had momentary difficulty in finding the right word. On admission he was mentally dull and apathetic, but his memory was fair. The sense of smell was good on the right but absent on the left. There was no facial paralysis; the limbs were of equal strength. On holding out both arms in front of him there was perhaps a little more vibratory tremor in the left than in the right side. There was no defect of sensation of any kind. The deep and superficial reflexes were normal and equal. The sphincters were not affected. There was no local tenderness of the cranium. There was double optic neuritis; in the left eye were several hæmorrhages near the disc and swelling of + 3 dioptres; in the right eye there were blurring of the upper and lower edges, no hæmorrhages, and swelling of + 1 dioptre. Transient attacks of blindness of the left eye occurred. There was no mental affection. Later the right side of the face moved slightly less than the left. Coördination was not affected. Later still the abdominal reflex was slightly less on the right than on the left and in the plantar reflex flexion of the big toe on the right side was not so evident as on the left.

This case was very similar to the one under my care which I have just described. There were headache behind the eyes, vomiting, and double optic neuritis. Mentally the patient was dull and apathetic, but he had no incontinence of urine. He had fainting attacks with unconsciousness like petit mal. The localisation to the left frontal lobe was determined by the complete loss of the power of smelling on the left side. He had occasional fine tremor of the left hand—i.e., on the same side as the tumour. The right side of the face did not move quite so well as the left, the abdominal reflex was slightly less on the right than the left, and the right plantar reflex gave a doubtful flexion of the big toe. The optic neuritis was more marked on the left side and he had transient attacks of blindness of the left eye. These symptoms were all slight and required very careful examination to elicit them, but they were all in favour of tumour of the left frontal region and the diagnosis was correct.

I now propose to take a second group—viz., those tumours which involve the outer surface of the frontal lobe, of which I

[2] THE LANCET, Nov. 3rd, 1906, p. 1209.

[3] THE LANCET, Nov. 3rd, 1906, p. 1209.

have notes of five cases, four of which were under the care of Sir William Gowers. The first case was that of a gumma of about the size of a walnut, which was removed by Sir Victor Horsley from the posterior part of the second frontal convolution of the right hemisphere, just in front of the area for the representation of the arm in the ascending frontal convolution, and it passed down almost to the fissure of Sylvius and the island of Reil. For 12 months the man, aged 42 years, had severe headache, most acute over the right ear; for nine months he had vomiting frequently in the morning. For four months he had had fits, which began with numbness in the left fingers passing up the arm, then twitching of the fingers; he then became unconscious with general convulsions, biting his tongue and passing urine. After the fits he had weakness and numbness which persisted after the last fit. He was dull and apathetic and his memory was bad. The sphincters were not affected. He had tenderness of the head, especially over the right ear. The sense of smell was fair but was deficient on the left side (the side opposite to that of the tumour). Double optic neuritis, slightly more marked on the left side (opposite to the tumour) was present. The ocular movements were good. The tongue was protruded slightly to the left and there was some weakness of the left face, arm, and leg, with increase of the deep reflexes and absence of the superficial reflexes on the left side and with extension of the big toe in testing the left plantar reflex. There was slight tremor in the right hand when he held out both in front of him.

A man under my care had a gumma of the dura mater involving the middle part of the right middle frontal convolution and the adjacent parts of the first and third frontal. Besides the general symptoms he was mentally stupid and on standing or walking he lurched backwards and to the left—the side opposite to the lesion—a condition which was noted in a few other frontal cases. He had a fit beginning with turning of the eyes and head to the left.

The third case was that of a man, aged 39 years, who had a tumour of the size of a walnut removed by Sir Victor Horsley from the posterior end of the right second and third frontal convolutions. The patient had his first fit 18 years ago, when the mouth was drawn to the left, and he was convulsed in the face and limbs, especially the left side; he was unconscious and bit his tongue and had involuntary micturition. In some of the fits he was conscious; he had numbness in the left side, the eyes rolled to the left, twitching of the left face, and numbness but no twitching of the left limbs. For 15 months he had headache above the right eye, for 12 months some loss of sight of the right eye followed later by the left eye, and for three months daily vomiting. For three months the left side of the face had been permanently weak after the last fit. On admission he was dull and his memory was bad, but the sphincters were not affected. He had in the hospital several fits, in which for half an hour before he gave wrong answers to questions and lost his speech; the twitching began in the left side of the face and later involved both sides. The whole of the left side was weak, the deep reflexes were increased, and the superficial reflexes were diminished on the left side, while the left plantar reflex was extensor. When both hands were held out in front of him a fine tremor was observed in the right fingers—i.e., on the same side as the tumour. On the sensory side he had numbness and very slight anæsthesia of the left hand, but stereognosis was good. He had secondary optic atrophy of both eyes with some loss of vision, and especially of the right eye.

In the fourth case, a man, aged 38 years, had headache three months with tenderness over the right eye, purposeless vomiting, and double optic neuritis. His memory was bad and he was depressed, nervous, irritable, lethargic, and inattentive. For three months he had had fainting attacks; he did not become completely unconscious. The sense of smell was described as poor but there was no difference on the two sides. The sphincters were not affected. There was defective movement upwards of both eyes, especially of the right; the left arm and leg were slightly weaker than the right, the knee-jerk was equal on the two sides but the ankle-jerk was more marked on the left than the right, and the superficial abdominal reflexes were present on the right and absent on the left. There was an occasional fine rapid tremor affecting the right arm and leg and the right arm was occasionally ataxic. There was no loss of sensation. A tumour—glioma—was removed by Sir Victor Horsley from the middle of the right middle frontal convolution and below it there was a cystic cavity going down to the wall of the lateral ventricle.

In another case the patient, a man, aged 33 years, had in the right middle frontal convolution an adeno-sarcoma of the size of a Tangerine orange and extending inwards into the frontal lobe and downwards to the frontal operculum and forwards to three quarters of an inch from the frontal pole. For three months there were severe headache (frontal and occipital), vomiting, and optic neuritis. For five weeks he had been dull mentally and on admission he was slow in answering questions. For one month he had giddy attacks and ten days before admission he was found unconscious on the floor. On examination he had no sphincter trouble. The movements of the eyes upwards were limited and there was some weakness of the internal recti; the right face and the right masseter and pterygoids (on the same side as the tumour) were weak.

In all these five cases just described the tumour involved chiefly the second or middle frontal convolution, and in all of them there were attacks of various kind, which differed according to whether the tumour was situated close to the ascending frontal convolution or nearer towards the frontal pole of the brain. In three cases where the tumour was near to the ascending frontal convolution the fits affected first the fingers, or the conjugate movement of the eyes, or the angle of the mouth, while in two cases where the tumours were in the anterior part of the second frontal gyrus there were attacks of giddiness or fainting without convulsions, more like petit mal. In all cases the mental condition was described as dull, stupid, slow, and inattentive, with bad memory except one case, but in none were the sphincters affected. In all of the cases there was slight weakness, either defective movement of the eyes to one side or upwards or some weakness of the opposite face, arm, or leg, with in some cases increase of the deep reflexes and diminution of the superficial on that side. These symptoms were probably due to pressure on the ascending frontal convolution. Sensation was either not affected or there was temporary anæsthesia to slight touches after the fits, but stereognosis—the recognition of objects by the touch—was not affected. Affections of the sense of smell did not assist the diagnosis. In four cases in which it was looked for fine tremor in the fingers was observed in all on the same side as the tumour. It would therefore appear that the presence of fits, either faints or attacks beginning with spasm of conjugate movement of the eyes to, let us say, the right, or of the hand or face followed by weakness but not by permanent anæsthesia and with increase of the deep and diminution of the superficial reflexes; of mental symptoms; and of fine tremor on the left side, opposite to that affected by the fits and the weakness, are the diagnostic signs of tumour of the outer surface of the cortex of the left frontal lobe anterior to the ascending frontal convolution.

The next case was a tumour of the outer surface of the hemisphere but involving the superior frontal gyrus. It was a case under the care of Dr. J. S. Risien Russell of a man, aged 55 years, with a large tumour on the mesial and upper region of the right frontal region in front of the ascending frontal convolution and involving chiefly the superior frontal convolution. It grew from the dura mater and pushed the brain before it nearly down to the lateral ventricle. It measured 2¼ by 2 inches. Six months ago he had pain on the whole of the left side of the body and later he had weakness of the left side, in the order of the arm, leg, and face. He had two fits which were not seen. On admission there was much mental hebetude. There was no optic neuritis but increased redness of both discs. There were intense rigidity and some weakness of the left arm and leg and weakness of the left face; also subjective pain and diminution of sensation to touch and pain over the whole of the left half of the body but no loss of sense of position. Deep reflexes, left > right; abdominal and epigastric reflexes, right > left; left plantar reflex, extensor. This case differs from those just described in being situated in the posterior part of the superior frontal convolution. It is a case which shows the difficulties of diagnosis as one would have expected the patient to have had numerous epileptiform fits beginning in the foot. As it extended so deeply the slight anæsthesia may have been produced by pressure on the sensory fibres of the corona radiata.

In the third set of frontal cases the growth occupied the internal white matter of the frontal lobe and can be classed as intramedullary tumours. In only one or two out of the ten of which I have notes did the tumour appear on the

surface of the brain. The symptoms were different according to the degree to which the tumour extended posteriorly and whether the internal capsule was compressed, as in none (or perhaps in one case) of these cases was it actually involved by the growth.

The first case which was under my care was that of a man, aged 29 years, who had an infiltrating glioma measuring 2 by 2½ inches at the most anterior part of the right frontal lobe. He had pain especially over the right eye and pain and tenderness behind the right ear, with vomiting, loss of eyesight, especially of the right eye, and intense double optic neuritis. There was no mental change. The sense of smell was normal on both sides. No tremor was observed. He had no localising signs except four or five attacks of sudden numbness over the distribution of the right fifth nerve lasting five minutes, but these were not diagnostic of a frontal tumour as they might be caused by a tumour of the middle fossa of the skull, and the same may be said of the vision being more affected on the side of the tumour. This case shows the extreme difficulty of diagnosing frontal cases where there is a lack of symptoms.

In the next case, which was under the care of Dr. Hughlings Jackson, the growth measured 2¾ by 2¾ inches and it extended from the middle line to the outer surface, where it involved the posterior part of the superior and middle frontal convolutions. The patient had two general fits with loss of consciousness. There were intense frontal headache and double optic neuritis but no history of vomiting. Mentally she was stupid but her memory and attention were good; her sense of smell was good. She had nystagmoid jerking of the eyes on lateral movement but no definite paralysis. The deep reflexes were equal and the plantar reflex gave flexion of the big toe.

In another case under my care, the tumour, of the size of an orange, in the right frontal lobe, reached to the middle line and posteriorly to the front of the basal ganglia and in the centrum ovale as far back as the genu of the internal capsule. The patient had frontal headache and later occipital of a bursting character, vomiting, and double optic neuritis. Her intelligence and memory were good but she had incontinence of urine. The sense of smell was deficient on both sides. She had no paralysis, except perhaps very slight weakness of the left side of the face. There was no difference in the reflexes of the two sides.

The next case, under the care of Dr. J. A. Ormerod, was that of a man who had a cystic tumour in the right frontal region within the white matter; it extended across the middle line, lying between the corpora striata. He had fits for 18 months and double optic neuritis. His memory was bad and his mental condition was stupid. The left side of the face was weak; there was no weakness of the left arm and leg but he fell to the left when the eyes were closed.

In the following cases the tumours extended further posteriorly and in all of them there was a certain amount of paralysis, due probably to pressure on the motor fibres on their way down from the motor cortex to the internal capsule. The first of this group was under the care of Dr. Ferrier, that of a man, aged 40 years, with a tumour within the right frontal lobe, not involving the cortex but extending backwards for three inches and downwards to the anterior cornu of the lateral ventricle. He had severe headache for one year over the right eye, vomiting, and optic neuritis, general epileptic fits without any warning, marked mental changes with delusions, and attention difficult to fix. His sense of smell was good and equal on the two sides. He had incontinence of urine, left hemiplegia with a tendency to fall to the left with increase of the deep reflexes and diminution of the superficial reflexes on the left. There was no sensory loss at first but later there was some astereognosis (or want of recognising objects by touch) in the left hand. In this case fine rapid tremor was noticed in both the hands but especially in the right (the side of the tumour). Another case, under the care of Dr. H. H. Tooth, was that of a tumour occupying the anterior third of the median half of the left hemisphere within the white substance, reaching the median surface of the brain, invading below the genu of the corpus callosum and the lateral ventricle and producing right hemiplegia. In the next case, under the care of Dr. H. Charlton Bastian, the tumour extended in the white matter of the left frontal lobe from just behind the cortex of the frontal pole to half-way along the body of the corpus callosum and compressing the basal ganglia. Another case, under the care of Dr. Ormerod, was that of a tumour measuring 2 by 1¼ inches in the posterior part of the left frontal white matter extending upwards to three-quarters of an inch from the surface of the cortex and to one-eighth of an inch from the median surface; it pushed away backwards the anterior limb of the internal capsule and the basal ganglia. Besides the general symptoms the patient was dull mentally and had some motor aphasia. Smell was not affected, nor were the sphincters. He had fits which began in the right arm, in the right face, in the turning of the head to the right, or in the right leg. He had right hemiplegia with only slight affection of the face with increased deep reflexes on the right with extensor plantar reflex but no anæsthesia. The diagnosis here was very difficult, but the irregular way in which the fits started, the absence of anæsthesia, and the presence of mental changes were in favour of a tumour of the frontal central white matter rather than of the cortex. The last two which I describe began with general convulsions. In one, under the care of Sir William Gowers, the tumour reached half-way along the body of the corpus callosum, and the other, under the care of Dr. Ferrier, reached the anterior end of the corpus callosum.

In all of these last six cases there were severe headache, vomiting (except one case), double optic neuritis, mental obtuseness, want of memory and attention, and with incontinence of urine in most of the cases, but no difference in the sense of smell on the two sides; a gradual hemiplegia without any anæsthesia, but with increase of the deep reflexes, diminution of the superficial reflexes with extensor plantar response on the paralysed side. In three of these cases there was a fine rapid tremor of the hand on the same side as the tumour and also a tendency to fall backwards in one case. These cases of tumour of the interior of the frontal lobe are exceedingly difficult to diagnose and especially before there is any hemiplegia from the growth having extended backwards, as in the first four cases I mentioned. The headache is often frontal but it may be on both sides. Smell is not affected on one side as it is in extramedullary tumour, a point which I mentioned in the address which I gave to the Neurological Society nine years ago, and which was previously pointed out by Dr. R. T. Williamson[4] in his paper on prefrontal tumours. The deep and superficial reflexes may not be altered though they are usually diminished, and in the cases, where the tumour has not extended backwards there is no hemiplegia. Mental dulness is often a prominent symptom and also involuntary micturition, but they do not help us as to which frontal lobe is involved, as I cannot find from these cases that mental symptoms are especially associated with the left prefrontal lobe, as has been stated by Dr. Phelps of New York.[5] We should have to rely on the tremor occurring on the same side as the tumour. In two cases, however, where the tumour was on the left side the patient was not able to speak properly and there was some aphasia. When the tumour extends backwards so as to compress the motor fibres of the corona radiata or internal capsule, gradual weakness of the face and limbs on the side opposite to the tumour comes on with increased deep reflexes and diminished abdominal and epigastric reflexes with extensor plantar reflex, but without any affection of sensation. As soon as these symptoms appear they point to which side of the brain is affected and this, taken with the mental symptoms and the involuntary micturition and the fine tremor on the same side as the tumour, may enable a diagnosis of a frontal tumour to be made and also in which hemisphere it is situated. It must be remembered that a gradual hemiplegia may be caused by a tumour in the corpus striatum pressing on the internal capsule, but in these cases there is probably not so much mental change and the tremor on the same side as the lesion is not observed.

TUMOURS OF THE TEMPORAL LOBE.

I propose to take next tumours of the [temporo-sphenoidal or temporal lobe, as it is often called, the part of the brain which lies inferiorly to the Sylvian fissure. What help do experiments on animals give us in determining the functions of this lobe? According to the experiments on monkeys by Dr. Ferrier there are two of the senses localised in this lobe, the olfactory and the auditory. Taking first the olfactory sense, Dr. Ferrier has removed the anterior part of the temporal lobe on both sides in monkeys with the result of abolishing the sense of smell and taste. Transferring these results to the brain of man, the olfactory centre would comprise the anterior part of the temporal lobe, extending

[4] Lesions of Prefrontal Region, Brain, 1895.
[5] American Journal of the Medical Sciences, p. 457, 1906.

backwards to include the gyrus uncinatus and its hook or uncus. With regard to the auditory centre, Dr. Ferrier found that on removing the cortex of the first or superior temporal convolution on both sides in the monkey the animal became completely deaf to all sounds. It should be stated that Schäfer and Sanger Brown [6] repeated these experiments and failed to get loss of the sense of smell and hearing, but Ferrier has since repeated his experiments and confirmed his previous results. Clinical observations so far as they go are in favour of Dr. Ferrier's views, but clinical observations are very uncertain, as it is impossible to limit the lesion to the particular part we wish to investigate, and it is quite certain that clinical investigation without experimental work would never have disclosed to us the situation of these two centres. I would again call attention to the work of Dr. A. Campbell on the cell arrangement of the cortex and the parts which he assigns to the sense of smell and that of hearing.

The position of tumours of the temporal lobe is very difficult to diagnose, and this is due to the condition that the area is very large and that from experimental work on animals only two centres—viz., those for taste and smell and those for hearing—have been localised, and though it is fairly certain that the sense of smell and probably that of taste are localised in the anterior part of the temporal lobe, including the uncus, in none of the cases of which I have notes has there been any loss of smell from destruction of this part of the temporal lobe. We have to rely on fits having a special character to make a diagnosis of tumours of this part. The fits to which I allude were first called attention to by Dr. Hughlings Jackson [7] in 1876, who describes them as "intellectual auræ or intellectual warnings of epileptic seizure"; the patients had what Dr. Hughlings Jackson gave the name of the "dreamy state," they felt in some strange place, yet it was some place they had been in before. This dreamy state, or "intellectual aura," as he also called it, was associated with crude sensations of smell and taste and also with chewing and spitting movements. Dr. Hughlings Jackson considered that from the experiments of Dr. Ferrier with regard to the localisation of the sense of smell these attacks would have their seat in the uncinate region of the temporal lobe.

As regards the localisation of hearing, although Dr. Ferrier's experiments make it almost certain that hearing is localised in the superior or first temporal convolution, it is difficult to say whether it is the whole convolution or only part of it which is concerned with hearing. Up to the present time I have not come across a case recorded in which loss of hearing of one ear was caused by a lesion of the superior temporal convolution of the opposite side, but Dr. Ferrier, in his Croonian Lectures on Cerebral Localisation, in 1890, refers to a case by Shaw and one by Wernicke and Friedländer where complete deafness on both sides was associated with complete atrophy of the angular and superior temporal convolutions of both sides in one case, and in the other case an extensive lesion was found in each temporal lobe invading the superior temporal convolution. Also of 25 cases of word-deafness—a condition in which the patient can hear ordinary sounds but cannot understand the meaning of words or names—collected by Dr. Ferrier in all but one there was a lesion of the superior temporal convolution.

I propose to take first tumours situated at the anterior part of the temporal lobe involving the hippocampal lobule which contains in its interior a mass of grey matter called the nucleus amygdalæ, but not involving the gyrus uncinatus or the part of it called the uncus or hook.

The first case to which I shall refer is one which was brought before this society by Dr. Hughlings Jackson and myself in 1889. It was the case of a woman, aged 53 years, whom I first saw as an out-patient at the National Hospital and who was admitted as an in-patient under the care of Dr. Hughlings Jackson. For 13 months before admission she had epileptic attacks with the following peculiar warning. The patient was a cook and just before a fit she said that she saw a little black woman—and it was always the same woman—who was actively engaged in cooking and was flitting about the kitchen; the spectre did not speak to her. She then experienced the sensation of a very horrible smell like "burning dirty stuff," and had the feeling of being shut up in a box and of being suffocated. In the attack the patient would stand with her eyes fixed and say, "What a horrible smell!" She was not convulsed and though she passed urine in the attacks she did not bite her tongue; she became cyanotic, but whether she was unconscious was doubtful. The attacks were as often as three a day. A week before admission she gradually became weak on the left side. On admission she was very drowsy, dull, and lethargic, but she had no headache and no optic neuritis till a few days before her death. There was weakness on the left side of the face, the arm, and the leg, while the tongue was protruded slightly to the left. Of the special senses, taste and smell were normal and hearing and sight were not affected. She gradually became worse and weaker on the left side, and in walking she fell to the left. Finally, she was completely paralysed in the left side. After death a tumour, a round-celled sarcoma, was found involving the cortex and the central white matter of the anterior end of the right temporal lobe and also the grey matter there known as the nucleus amygdalæ, but it did not affect the cortex of the uncinate or hippocampal convolution or its process the uncus. Reference has already been made to the experiments of Dr. Ferrier, which showed that the centre for smelling was probably in the anterior part of the temporal lobe, including the hippocampal lobule and the anterior part of the uncinate convolution and the uncus, and it is important to note that only a part of this area was directly involved—viz., the hippocampal lobule—while the uncinate region may have been compressed. As there was no loss of the sense of smell this case would be in favour of the supposition that all the olfactory centre was not destroyed and that the part which escaped was pressed upon by the tumour and produced by irritation of its cells the sensation of the horrid smell which the patient experienced. The highly organised visual picture of the black woman is more difficult to explain, but in most of Dr. Hughlings Jackson's original cases the patients had visual spectra associated with the sensations of smell, and these visual pictures seem to be associated more with irritation of the higher mental centres than with that of the visual centres. The fits in this case were of the nature of petit mal and they did not give any assistance as to which side the tumour was situated, but the weakness of the left forearm and leg pointed to a compression of the right internal capsule (which was found at the examination of the brain) and to the lesion being in the right tempero-sphenoidal lobe. We referred in the above paper to cases by Sandes and by Hamilton, where lesions of the anterior part of the temporal lobe and uncus produced fits with the sensation of a horrid, disagreeable smell. I would here refer to a case of the late Dr. James Anderson [8] where the patient had attacks preceded by a "rough, bitter sensation" in his mouth and at times a smell, and associated with visions of his childhood, due probably to a large tumour in the interpeduncular space and compressing the left temporal lobe. Also to a most important case, under the care of Dr. Hughlings Jackson and Dr. W. S. Colman,[9] where a softening was found of the left uncinate convolution just below the uncus and the patient had attacks of the dreamy state, "reminiscences" of sentences which came into his mind as if well remembered, as well as smacking and tasting movements of the lips and tongue, but he had no sensation of taste or smell before the attacks.

In another case under my care where a tumour, of the size of a small orange, involved the anterior end of the right temporal lobe, but not the gyrus uncinatus or the uncus, and extending forwards beneath the frontal lobe, the patient, a man, aged 21 years, had pain on the right side of the head and vomiting for 18 months and deafness of the left ear for one month. He had slow cerebration, bad memory, and he was drowsy with daily vomiting and double optic neuritis going on to atrophy. He had complete paralysis of the left side of the face without loss of electric reactions, and weakness of the left arm and leg, and he fell to the left in walking and standing. The knee-jerks were feeble but equal and the left plantar reflex was extensor. The sense of taste and smell was inaccurate on both sides and had been failing for some time; hearing was lost to bone conduction on the left side.

This was a most difficult case to diagnose, as there were symptoms of loss of hearing on the left side, diminution of smelling and tasting on both sides, and paralysis of the left side of the face, which might have been due to pressure on the right frontal or temporal lobe, but he had no fits which might have assisted the diagnosis. At the same time

[6] Brain, vol. x., p. 373.
[7] Medical Times and Gazette, Dec. 23rd, 1876.
[8] Brain, October, 1898.
[9] Brain, 1898, p. 280

the loss of hearing and the marked paralysis of the face on the left side, taken with the staggering to the left in walking and standing, were very suggestive of left cerebellar disease, especially as paresis occurs on the same side as a cerebellar lesion.

In a case, under the care of Dr. Ormerod, in which the anterior third of the whole substance of the right temporal lobe was involved, without the gyrus uncinatus or the uncus, by a large tumour, a fibro-sarcoma measuring 3 by 2 inches, besides headache on the right side, vomiting, and double optic neuritis which was more marked on the side of the tumour, the patient had delusions and slow cerebration with involuntary passing of excreta. Her sense of smell was bad, as she could recognise odours on both sides but not name them, her sense of taste was good, and her hearing was not so good on the left as on the right side. She had no fits. She also had weakness in the left arm and leg and fell backwards in trying to walk. The knee-jerks were both slight and later were abolished; the plantar reflex was first flexor and later extensor on the left side. The absence of the knee-jerk is due in many of these tumour cases to pressure which produces changes in the posterior columns of the cord and thus brings about loss of the knee-jerk.[10]

Taking next cases where the uncinate gyrus was affected without the hippocampal lobule I will refer to a case which Dr. T. Buzzard published last year in THE LANCET,[11] bearing on the function of the uncinate region. It was that of a woman, aged 21 years, who had a tumour, a glioma, in the right hippocampal or uncinate gyrus, which was much enlarged and the tumour projected out as an irregular mass on its inner side where it had destroyed the greater part of the uncus. Its anterior end infiltrated the right lenticular nucleus and probably compressed the internal capsule. She had headache in the right temporal fossa and vomiting but no local tenderness and no optic neuritis; also attacks of vertigo with apparent movement of objects and herself from right to left. Then she had curious dreamy attacks in which she felt dazed, her mind seemed to go to different places, a room full of people, then she lost her senses, but was not convulsed. She had attacks of pain down the right side and then down the left, and she would wake in the morning with a bad taste in her mouth, lasting all day, but no taste-sensation was associated with her attacks. Her memory became bad and she was dull and inattentive. Later she developed double optic neuritis, rather more marked on the right side, and slight weakness of the left arm and left leg. The knee-jerks were equal, but the abdominal reflex which had been deficient was later absent on the left, but well marked on the right, side. In this case the chief points were the curious "dreamy states"; the bad taste, which may have been due to irritation of the gustatory centre; the weakness of the left arm and leg, and the absence of the left abdominal reflex, which all pointed to a lesion of the right uncinate region.

The next case involved the anterior part of the temporal lobe, including the uncinate gyrus. It was that of a man under my care who had a tumour removed by Sir Victor Horsley from the anterior part of the left temporal lobe, and it was found after death that the tumour had extended forwards over the posterior two-thirds of the orbital surface of the left frontal lobe except the inner margin. The anterior part of the temporal lobe, including the uncus and the neighbouring part of the uncinate gyrus, was destroyed by the tumour. The patient had frontal and left temporal headache for nearly a year but no vomiting. For six months his vision was blurred; he had no fits but on two occasions the right arm dropped. For two years he had neuralgic pains in the left upper jaw and occasional numb feelings in the left arm and leg. He had had a "taste of chalk" coming on spasmodically. On admission he had intense pain and tenderness over the left temporal region, and double optic neuritis with diminished vision especially on the right side. His sense of smell and taste were both good. There was no loss of power, but slight tremor, in both hands. The deep reflexes were doubtfully increased on the right, and the right abdominal reflex was more easily exhausted than the left, while both plantar reflexes were flexor in character. In this case the chief localising signs for the left temporal lobe were the left temporal headache and tenderness, the taste of chalk, the doubtful increase of the right deep reflexes, and the diminution of the right abdominal reflex.

In the next case the tumour occurred in the temporal lobe from one and a half to two inches posteriorly to the anterior extremity of this lobe. The case was that of a female, aged 25 years, under my care who had for 15 months intense headache in the *left* temporal and occipital regions with vomiting. Five weeks before admission she had curious fainting attacks without unconsciousness, with numbness and stiffness in both legs, especially the left, followed by temporary weakness of the left side. She had double optic neuritis with atrophy of the right disc and consequent loss of sight. Sense of smell was absent on both sides and she had lost taste on the anterior half of the right side of the tongue. But the most important sign was that she had lost hearing in the *right* ear to both aerial and perosseal impressions, so that a tuning-fork placed on her teeth was only heard in the left ear. There was weakness of the lower part of the left side of the face, otherwise no paralysis and no alteration of the reflexes. In this case Sir Victor Horsley trephined over the left first temporal convolution and exposed a tumour behind and below the Sylvian fissure but he was unable to remove it. This case is very important, as the patient was deaf to all sound in the right ear and the lesion was in the left first temporal convolution. Whether this or some other lesion caused loss of taste on the anterior half of the right side of the tongue it is not possible to say.

I have notes of four other cases of tumour of the temporal lobe. One of these cases under my care was that of a girl, aged 15 years, who, with an onset of six months' duration, had vomiting and failing vision with double optic neuritis, and only light perception when she was admitted, and later pain especially over the left side of her head. Her hearing on the *right* was deficient both to aerial and perosseal conduction. Her taste and smell were both good. Later she had weakness of the right side of the face and of the right arm. There was a very large tumour, spindle-celled sarcoma, extending from the cortex of the *left* occipital pole forwards to the anterior part of the temporal lobe, obliterating the posterior ventricular horn. It measured 4¾ inches long by 2¼ inches wide and it grew in the white matter of the left temporal lobe, forming the roof of the descending lateral ventricle, but it did not involve the uncus. The basal ganglia and the internal capsule were pushed over to the right. Here, with a lesion of the left temporal lobe, there was some loss of hearing of the right ear; the uncinate region was not affected and there was no affection of smell or taste. In another case under my care with involvement by a large tumour on the *under* surface of the left temporal lobe, the whole of the temporal lobe, a great part of the occipital, and about two-thirds of the frontal lobe were involved by the growth, and there was no loss of hearing, but the sense of smell was impaired on both sides. In two cases under the care of Dr. Hughlings Jackson and Dr. Buzzard respectively, where the tumour involved the posterior and superior part of the temporal lobe external to the optic thalamus and lenticular nucleus in the one case and the posterior and descending cornua of the right lateral ventricle in the other case, there was no deafness and no loss of smell or taste.

In the temporal lobe of the 10 cases which have just been described, in three cases the anterior part of the temporal lobe was involved but not the gyrus uncinatus. In one of these cases the patient had fits with the aura of a horrible smell; in the other two cases the sense of smell on both sides was bad but this may have been due to excessive intracranial pressure. Hearing in the opposite ear was lost in one case and diminished in another, and in both cases the anterior part of the superior temporal was involved. Of the other cases, in one with a tumour of the gyrus uncinatus there were fits of the "dreamy state" with a bad taste lasting all day; and in a case of tumour of the anterior part of the temporal lobe, including the gyrus uncinatus, the patient had the feeling of the "taste of chalk" occurring spasmodically. Complete deafness of the right ear occurred in a tumour of the left superior temporal convolution and smell was absent on both sides (? intracranial pressure). In the remaining four cases hearing was not altered, except in one case where it was deficient in the side opposite to the lesion, and taste and smell were not affected; in none of these cases was the superior temporal convolution directly involved, with the exception of one case where it was involved but the necropsy was made some time after the patient could be examined, and extension of the growth might have occurred.

[10] See paper by F. Batten and James Collier in *Brain*, 1899, p. 473.
[11] THE LANCET, June 30th, 1906, p. 1807.

In all the above cases there was always great difficulty in localising in which hemisphere the tumour was, especially in tumours about the uncinate region, but in nearly all the cases there was weakness of the opposite face or limbs, or increase of the deep reflexes, or diminution of the superficial reflexes, with extensor plantar reflex on the side opposite to that of the lesion due to secondary pressure of the growth on the internal capsule, which gave some help to the diagnosis.

ON THE CONDITION OF THE BLOOD-VESSELS DURING SHOCK.[1]

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UNTIL recent years it was taught that in the state of shock the vessels in the splanchnic area were paralysed. In 1893 I suggested that this view was not in accord with the conditions observed at the bedside and in the operating theatre. I urged that the vessels, and especially the peripheral vessels, were tensely contracted and that the blood was forced rather than drawn into the central parts of the body. My dissatisfaction with the older teaching has been shared by Dr. G. W. Crile, but his explanation of the phenomena observed may be described as directly opposed to mine. He holds that in the state of shock the blood-vessels are paralysed throughout the body and that this is due to "an exhaustion or breakdown of the vaso-motor centres."[2] Having come to this conclusion he recorded a large amount of complicated experimental work which he interpreted according to his theory, but it seems to me that he altogether failed to give a satisfactory explanation of important facts which were put forward by himself or which are generally recognised. For example, it is quite certain that the superficial capillaries are not distended during shock and no evidence has been put forward to show why it is that their distension does not occur as a consequence of the paralysis of the muscular coats of the blood-vessels which is said to exist. Again, Dr. Crile stated that the first action of vaso-dilators administered during shock was to increase the volume of the pulse,[3] but no explanation was offered as to how vaso dilators increased the volume of blood in an artery which was declared to be already paralysed by an exhaustion of its nervous supply. Dr. Crile also asserted that when an animal was in a state of profound shock if he introduced fluid into its veins the solution escaped from the vessels at a rate fairly proportional to that of its introduction.[4] He was unable to raise and to sustain the blood pressure beyond a certain time even during the infusion. He offered no explanation of this. It is certain, however, and Dr. Crile distinctly stated, that the vessels are not dilated throughout the body during shock and they should therefore be capable of accommodating a very large quantity of saline solution if their nerve supply is paralysed.

Another point is that Dr. Crile found that the blood pressure in the portal vein was raised during shock. How this could occur when there was an exhaustion of the vaso-motor centres was not explained. It has also been shown that the blood of an animal in a state of shock has its specific gravity raised. But if the vessels are paralysed their tendency should be to dilate, and serous fluids in these circumstances should pass from the tissues into the vessels. As a consequence, the specific gravity of the blood would not be raised but reduced, because the specific gravity of the serum is less than that of the blood as a whole.

A theory which gives rise to so many difficulties should be investigated critically, and it seems to me that a careful examination of the argument shows that a link in the chain of evidence is altogether wanting. Dr. Crile found that the blood pressure in the carotid was lowered during shock and he asserted that this must be due to a cardiac or vascular loss of power. Apparently it did not occur to him that a contraction of the vessels might cause a lowering of the blood pressure. His omission to discuss this possibility is the more remarkable in view of the fact, recorded by him, that in the course of his investigations a number of extensive dissections were made to observe the condition of the vessels. Animals were reduced to such a degree of shock that "the vaso-motor mechanism was wholly inactive except in response to most heroic stimulation"—that is to say, the most severe injuries were necessary to produce any further reduction of blood pressure in the carotid. It was then found that "the arteries were quite empty, the tissues pale, but the venous trunks everywhere were full alike in the somatic and splanchnic areas. There was a manifest transference of the greater bulk of the blood from the arteries and capillaries to the veins." Dr. Crile added that "the relative proportion of blood in the arteries and capillaries and that in the venous trunks gave a rough estimate of the depth of the shock at that time."[5] Dr. Crile also recorded that during the condition of shock the blood pressure within the splenic and portal veins was raised.[6] Thus it would appear that as the state of shock developed the blood collected more and more in those vessels in which the pressure was rising and passed out of the vessels in which the pressure was falling until the latter became "quite empty." The force which transferred the bulk of the blood from the areas of falling pressure to the areas of rising pressure is not obviously apparent if the vaso-motor centres were exhausted. If this theory is accepted it is difficult, I think it is impossible, to understand why the blood did not collect in the area of lowered pressure in accordance with the universal law that fluids flow in the direction of least resistance. The state of the vessels disclosed by dissections, as described by Dr. Crile, was altogether so unlikely to occur, if the vaso-motor centres were exhausted, that an explanation of the relationship to his theory of the conditions found seems necessary. He, however, so completely ignored the possibility that the vessels might be actively contracted during shock that, so far as I have observed, he offered no proof whatever, either argumentative or experimental, of his assertion that the fall of blood pressure which he invariably found during the state of shock "must be an exhaustion of the cardiac muscle, of the cardiac centres, of the blood-vessels, or of the vaso-motor centres." Moreover, arguing from this assertion as from an axiom, he was able to fix on paralysis of the vaso-motor centres as the cause of the lowered blood pressure during shock only by a process of exclusion. He showed that the fall of pressure was not due to a paralysis of the heart muscle, of the cardiac centres, or of the muscle of the vessel walls. Therefore, he said, the vaso-motor centre must be paralysed during shock.

This argument is only of value if the assertion on which it is founded is unassailable, a question to which I shall return. But in any case the evidence is entirely negative and in opposition to Dr. Crile's conclusion I would point out that Lord Lister recorded that he never failed to obtain a contraction of the vessels of the web of a frog's foot by stimulating the brain and spinal cord with a needle until first the brain and afterwards the cord were completely destroyed.[7] This seems to prove that even a direct injury cannot paralyse the vaso-motor centres except by destroying them. In view of such positive evidence of the persistent activity of these centres I venture to suggest that Dr. Crile's conclusion requires further proof. Such proof is the more required, because the assertion on which the above argument is based—namely, that a lowering of blood pressure in the carotids must depend on a relaxation of some part of the vascular system—is open to question. It is, in my opinion, an altogether untenable proposition. It appears to be founded on the idea that a contraction of the arteries causes a rise of blood pressure and a relaxation causes a fall. But this is a very incomplete and inexact statement of the well-recognised law that the small arteries exercise a regulating or stopcock action on the flow of blood to the tissues. When fully set forth an essential part of the stopcock mechanism is that a contraction raises the pressure in the large vessels, but at the same time lowers the pressure in the smaller ones, in those beyond the point where the stopcock is supposed to act. Hence, if any vessel has its lumen sufficiently contracted the blood pressure in it will be lowered. I believe that in this fact we have the true explanation of the fall of blood pressure in shock.

The ordinary mechanics of moving fluids do not support Dr. Crile's view. The blood stream may be compared to that

[1] A paper read before the Royal Medical and Chirurgical Society on Feb. 12th, 1907.

[2] Blood Pressure in Surgery, p. 401.

[3] Blood Pressure in Surgery, by Dr. G. W. Crile, p. 262

[4] Loc. cit., p. 269.

[5] Surgical Shock, by Dr. G. W. Crile, 1899, p. 140.

[6] Loc. cit., p. 138.

[7] Philosophical Transactions, vol. cxlviii.

of a river with many channels. If we imagine a river with a long island in its middle and, therefore, with two water-courses approximately of equal size, there can be no doubt that if one water-course were filled in so that a mere trickle of water passed along it the pressure of the water in it would be reduced, and by filling it up altogether the pressure of water would, of course, be completely removed. At the same time, the flow on the other side of the island would be increased in volume and in force, it being assumed that the water could not overflow the banks. During the process of gradually filling in and contracting the bed of the obliterated channel lateral pressure would necessarily be applied to the flowing stream and there might be very great difficulty in filling in the water-course, but the result, except perhaps just at first, would not be an increase of the pressure of the fluid against the banks of the contracted channel. On the contrary, in it the pressure of water would, inevitably (after a variable time) be lowered and the process of filling in the channel would become progressively more easy. The rapidity and ease with which the flow of water could be transferred to the other channel might vary but in all circumstances if it were possible to fill in one channel the water would be forced into the other and, if the process were carried sufficiently far, the increase of pressure would be in the overfilled and *not* in the contracted channel. In the latter the pressure would be reduced and finally would cease to exist.

If the water-courses on each side of the island were rubber tubes the effects of compression of one and of dilatation of the other would be exactly the same as in the water streams, so far as the incidence of outward and onward pressure, exerted by their flowing contents, would be concerned. So, when a vessel or a series of vessels in the normal human body is contracted the blood pressure in the affected area is lowered, whilst the flow becomes more free and the pressure rises in some other part or parts of the vascular system. It is certainly more correct to say that, in individual vessels, a lowering of the blood pressure is accompanied by a contraction of their walls than that it is accompanied by a relaxation. When the blood pressure in the aorta is lowered that vessel contracts on account of its elasticity and when the pressure in it is raised the vessel becomes dilated. In this case the size of the vessel depends chiefly on the pressure within it and contraction accompanies a fall of blood pressure. Again, when small arteries contract, the volume and pressure of blood within them are reduced and the lumen may even be occluded so that the blood pressure is completely removed. On the other hand, when these small vessels relax, a fuller blood stream and a higher blood pressure ensue in them. The size of the smaller vessels depends chiefly on the activity of their muscular walls, but in these vessels also contraction and not dilatation accompanies a fall of pressure. During digestion, the fuller blood flow in the splanchnic area is associated with a relaxation of the vessels of that area and an increased blood pressure in them, whilst the lowered blood pressure in the systemic vessels is associated with a contraction of the superficial vessels and with a lessened flow of blood to the surface.

Thus in the large and in the small vessels and practically in all conditions a lowering of blood pressure in any particular artery or vascular area is accompanied by a contraction and not by a relaxation of the vessels concerned. It is only when no vascular area will yield, as when long-continued irritation causes a chronic hypertrophy of the vascular tissues throughout the body, that a general rise of blood pressure is produced by tonic vascular contractions. But the arteries in which there is a chronic high tension are not necessarily contracted vessels. A fall of blood pressure in the carotid or in any vessel *may*, of course, be due to a relaxation of some other part of the vascular system, but no evidence has been brought forward to prove that a vascular relaxation *must* be the cause of a lowered blood pressure. The assertion is altogether unsupported by argument or evidence.

On the other hand, the view that the vessels are actually contracted affords an adequate, simple, and easily understood explanation of the phenomena under discussion and of the facts as described by Dr. Crile. All observers agree that the first effect of a stimulation of a sensory nerve is a contraction of the small arteries, and as I read the evidence the conclusion is inevitable that in shock there is an extreme development of this contraction which extends to the medium-sized and to many of the large vessels, in which, therefore, the blood pressure is reduced after a time. The narrowing process progresses until it may be difficult to find a pulse anywhere, the blood being forced into those vessels which yield most readily, chiefly the venous trunks. The conditions of emptiness of the arteries and capillaries and of fulness of the venous trunks, which Dr. Crile found by dissections to exist during shock, are therefore exactly those which I would expect. I have never seen any indication that the intense contraction changes to a relaxation unless the state of shock tends to pass off. The fact that the fall of blood pressure induced by severe shock affects both the large and the small vessels is fully accounted for if their state is one of contraction, but the significance of this fact has not, I think, attracted the attention of those who hold that the vessels are dilated.

If there is an intense and extensive contraction of the arteries during shock the question arises as to where the blood goes. Undoubtedly some part of the vascular system must relax or the bulk of the blood must be diminished. That the latter happens I have no doubt. The rise of specific gravity of the blood shows clearly that its fluid parts are relatively reduced in amount and this can easily be brought about by a squeezing of serum into the tissues, but is very difficult to explain if the capacity of the vessels is enlarged. A diminution of the total quantity of blood in the vessels cannot, however, take place quickly to any great extent, and therefore some part of the vascular system must relax. It has been shown already that the venous trunks are distended in the state of shock, but I am convinced from clinical observation that the larger internal vessels, arteries as well as veins, spout more forcibly if divided when the patient approaches a condition of shock than they do if the operation is not severe. I have noted this particularly in the cystic branch of the hepatic artery, in the renal arteries, and in the larger mesenteric arteries, and I believe that this is due to the fact that these large central vessels, both arteries and veins, are unusually full. A rise of blood pressure in the large vascular trunks of the internal areas is fully accounted for if the vessels throughout the body contract and if the superficial vessels are more tensely contracted than the central ones. A difference between the superficial and the central areas in this respect ought to exist, for a low temperature acts powerfully in contracting the vessels and the superficial temperature falls markedly in the state of shock. Moreover, the smaller vessels have comparatively a much greater muscular power than the larger. Thus all the conditions tend to collect the blood towards the centre of the body if my view is correct. But there is no evidence of paralysis of the vessels anywhere.

Much stress has been laid on the effect of adrenalin on the vessels. This drug induces a powerful contraction of their muscular walls irrespectively of the state of their nervous supply, and it raises the systemic blood pressure during shock. Its action in thus raising the blood pressure is said to afford a proof that the vaso-motor centres are paralysed. But the rise of pressure in the carotids would be quite as certain to be induced by adrenalin if, as I believe, and as Dr. Crile asserts, the blood is mainly collected in the venous trunks, whilst the arteries are, as Dr. Crile said, "quite empty." Any conditions which powerfully contracted the internal vessels when thus dilated would tend to redistribute the blood and force some of it into the systemic vessels, exactly as pressure upon the abdomen may improve the radial pulse. Of course, the extended muscle fibres of dilated vessels have a much greater range of contracting power than those already fully contracted. Indeed, a greater contraction in empty arteries can hardly be induced even by adrenalin. Hence the action of adrenalin in raising the blood pressure in the larger systemic vessels may be fully explained if the arteries are contracted, and therefore its effects do not prove that the vessels generally are dilated or that the vaso-motor centres are paralysed. According to the interpretation of the action of this drug which I have suggested, the beneficial effect gained by powerfully contracting the dilated internal vessels must be accompanied by a greatly increased resistance to the propelling force of the heart and the risks of cardiac failure consequent on its administration would therefore be considerable. In Experiment No. 106 in Dr. Crile's book on Blood Pressure in Surgery the animal under treatment died suddenly whilst the lowered blood pressure induced by traumatism was being successfully counteracted by the administration of adrenalin, but no explanation of the death was given.

To sum up:—The theory that the vessels are intensely contracted during shock offers a full solution of all the difficulties that I have pointed out as arising when the vessels are assumed to be paralysed. It accounts for the pallor of the skin; for the improvement in the pulse which, according to Dr. Crile, is induced by vaso-dilators; for the difficulty recorded by Dr. Crile of injecting fluids into the veins during intense shock; for the rise of pressure also recorded by Dr. Crile in the portal vein; and for the rise of specific gravity of the blood. Hence, I submit that every conclusion that the vascular system is relaxed if it is founded on the single fact that the blood pressure is lowered may be erroneous. The view of this question that I have put forward differs very slightly as regards the effects produced, although very definitely as to the theory of their production, from that founded on Goltz's observation that tapping the abdomen of a suspended frog caused a paralysis of its splanchnic vessels. According to both views the blood flows to the centre of the body because of the relatively greater resistance in the superficial vessels as compared with that in the central vessels. But I maintain that the relaxation of the larger internal vessels which occurs in shock is brought about not by their paralysis but chiefly by intravascular pressure. Probably they yield in part also because of a physiological necessity for an accumulation of the blood and a conservation of heat in the warmer parts of the body. I find no evidence that the vessels in these parts are paralysed during shock. If they were, I believe that sudden death would take place. It is easy to understand how, if my view is right, a large quantity of blood may be found in the veins of the splanchnic area after death, a condition which formerly was relied upon as a conclusive evidence that the vessels of this area were paralysed. Dr. Crile has shown that even during life the venous trunks everywhere were full and the arteries and capillaries were quite empty during the state of shock. The old view that the vessels of the splanchnic area were paralysed during shock had to be given up when it was possible to observe the internal vessels during operative procedures, for as the condition of shock develops the arterioles do not dilate, the parts remain pale, and, unless large vessels are divided, operative procedures cause little hæmorrhage. Hence the smaller vessels cannot be paralysed. Observations on conditions produced by prolonged exposure of the peritoneum to the air must, of course, be complicated by evidences of inflammation of that membrane, a source of error which has not always been eliminated.

Practical conclusions as regards treatment.—The effects of treatment also help to support my view. Warmth and stimulating vaso-dilators have long been used for combating the effects of severe injuries and they ought to prove beneficial if my explanation of the condition of the vessels is the right one. If Dr. Crile's view is correct vaso-constrictors and, theoretically, an ice-pack should be employed. But he definitely stated that exposure to cold was prejudicial. There can be little doubt that in practice injections of strychnine are useful during shock, probably by strengthening the whole vascular and nervous systems. But Dr. Crile found that a condition which he was unable to distinguish from that of shock could be rapidly induced by giving strychnine in large doses to dogs. As it produced this condition its administration was not considered good treatment for shock. There is no evidence that this strychnine shock did not arise in exactly the same way as I believe that traumatic shock arises—namely, by an exaggerated effect of its primary constricting action on the vessels. I have already referred to the action of adrenalin. Any treatment which helps to tide a patient over a short time until an operation can be finished or until a state of shock passes off may be useful, but, if my view is correct, adrenalin administered for shock can be beneficial only at a considerable risk. According to Dr. Crile's statements, saline injections have little effect in raising the systemic blood pressure when shock is intense, because the fluid, if injected, is rapidly exuded into the tissues. Before this stage is reached saline injections, by tending to keep up the bulk of the blood, may act beneficially, but again with the risk of throwing an extra burden on the heart and on the pulmonary vessels, and of causing an œdematous condition of the tissues. During recovery from shock, if, as I believe, the vessels are relaxing, saline injections should be useful, and it is well known that at this stage fluid will find its way into the vessels from the rectum almost as quickly as by direct injection. Theoretically, and I think practically, injections into the cellular tissue are to be preferred to those into a vein, if some such treatment is considered desirable during shock, because if the fluid does not find its way into the vessels from the cellular tissue an attempt to force it into a vein is likely to be not only futile but also harmful. I regard the usefulness of injections with a view to increasing the bulk of the blood as very limited in cases of uncomplicated shock.

The most important treatment is preventive. When there is time before an operation the patient should be got into the best condition possible by the administration of strychnine, by attention to the condition of the bowels, by judicious feeding, and by the treatment of any complications that may exist. During an operation everything possible should be done to maintain a flow of blood to the surface and to the head, and to keep the patient alive by warmth, by the administration of strychnine, and of vaso-dilators and by mechanical means, such as lowering the head and compressing the abdomen. The surgeon must reduce traumatism by getting over the operation quickly, but with the least possible loss of blood at the time and afterwards. These are the methods that are generally most successful, and they are exactly those which are suggested by the view that the vessels are contracted during the state of shock.

Portman-street, W.

A CASE OF

INFECTIVE ENDOCARDITIS CURED BY THE INOCULATION OF A VACCINE PREPARED FROM ORGANISMS FOUND IN THE PATIENT'S BLOOD,

THE INOCULATIONS BEING REGULATED BY THE EXAMINATION OF THE OPSONIC POWER OF THE PATIENT'S SERUM.

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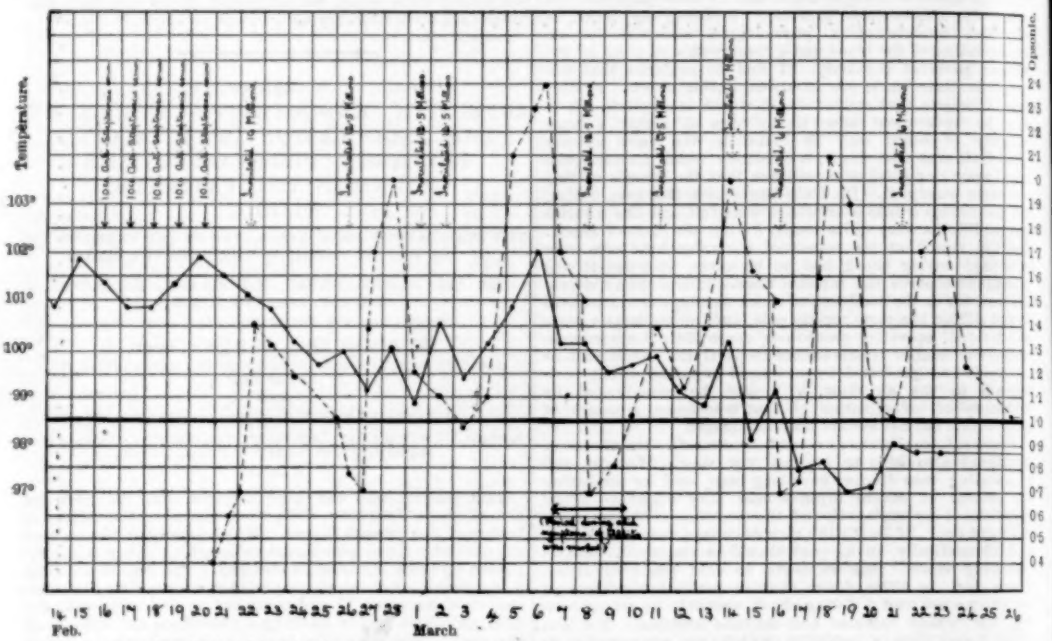
THE patient, who was aged 25 years, was first seen by one of us on Jan. 13th, 1906, when she gave the following history of her present illness. While staying in the country she noticed a slight sore-throat on Jan. 5th; this was accompanied by some vomiting on that day. The sore-throat soon disappeared. Her menstrual period commenced on Jan. 8th; she felt shivery and ill and continued in that state until the 12th, on which day a swelling appeared on the left side of the neck. She concluded that she had contracted a "chill with her period" as this was curtailed. When seen the patient was going about and had thought of going to a dance that night; she looked flushed but was bright and active. A careful examination revealed nothing except a large, soft swelling behind the angle of the jaw on the left side. This had the consistence and resemblance of the parotid gland in a case of infective parotitis; its position was, however, hardly coincidental. Nothing abnormal could be detected in the throat, nose, ear, or scalp. There was no pain or tenderness in the swelling on palpation, but some feeling of stiffness. Occurring when it did, one was tempted to wonder if it was a metastatic phenomenon in the parotid gland, in spite of the position, in conjunction with a pelvic lesion. This swelling, however, which was of the size of a split orange, totally disappeared in three days. The probability is that it was due to some periadenitis. On Jan. 13th the temperature was 105° F. and the pulse correspondingly rapid. The temperature continued high, in spite of repeated spongings, and when taken during the first three days was invariably 105°. The heart was repeatedly examined during the early days of the illness and the sounds were found to be normal. There was no albumin in the urine. On Jan. 16th ten cubic centimetres of Messrs. Parke, Davis and Co.'s antistreptococcic serum were injected, and further doses of this, or that of the

Lister Institute or Messrs. Burroughs, Wellcome and Co.'s polyvalent serum, were given on the 20th, 22nd, 23rd, 24th, 25th, 26th, 27th, and 28th with no appreciable result. During this time the temperature ranged from 99° to 104°, usually remaining at the lower temperature for but a short time. Rigors were frequent. After the patient had been under observation for about a fortnight symptoms of endocarditis of the right ventricle were detected; at first very slight, these gradually became more pronounced; there was dilation of the tricuspid orifice accompanied by a slight murmur, and pulsation in the veins of the neck and in the liver which became large and rather tender. After the rigors, which occurred frequently, there was a troublesome cough with a little scanty mucous expectoration. The left ventricle was not enlarged, and there was no enlargement of the spleen. The urine at this time was simply febrile urine, but later it contained a cloud of albumin. On Jan. 26th a small abscess was opened in the foot and an investigation of the pus showed the presence of a streptococcus in short chains. Every endeavour was made to find the source of the infection. Cultures made from swabs from the throat and nose threw no light on the matter. As a precautionary measure these regions were kept as aseptic as possible. Attempts to make cultures from the blood proved futile. On Jan. 29th an examination of the pelvic organs and the abdomen was made under an anæsthetic with a negative result; consequently up to the end of January we were face to face with a severe infective process, the exact origin and nature of which had not been clearly established. We had localised it in the right side of the heart and we believed the infection to be a streptococcus because of the rigors, the great oscillations in the temperature, and from the fact that we had discovered a streptococcus in the small abscess. However, all the brands of antistreptococcic serum manufactured by Messrs. Parke, Davis and Co., Messrs. Burroughs, Wellcome and Co., and the Lister Institute had been fairly tried without any marked benefit. The patient was well fed, had salines regularly by the rectum, antiseptics internally, and remedies such as nuclein, which are supposed to stimulate phagocytosis. On Feb. 2nd the patient complained of pain in the right side. This was the commencement of a slight pleurisy during which some effusion occurred but which gave rise to no serious anxiety or trouble. At a consultation between two of us the question of Sir A. E. Wright's method of treatment was discussed, and we decided to call him in as the man most likely to be of assistance in this very anxious case. On Feb. 4th we had a consultation with Sir A. E. Wright, at which Professor T. R. Glynn was also present. It was decided to give the method a trial as soon as a culture could be obtained from the patient's own blood. It was also arranged that Captain Douglas should come down to take the patient's opsonic index twice daily and regulate the strength and frequency of the dose of vaccine. The blood withdrawn by Sir A. E. Wright on that occasion, however, proved to be sterile.

Although we were of the opinion that we had to deal with septic organisms, probably streptococci, we had failed to isolate them from the blood, and the father of our patient was strongly averse to trying any vaccine obtained from any other source. Accordingly, the previous line of treatment was continued: sponging when the temperature rose, salines by the rectum, oxygen inhalations (commenced on Feb. 6th), together with calcium chloride, iron, and nucleo-proteid by the mouth. No organism was isolated from the blood until Feb. 12th, when a pure culture of streptococcus was obtained from a specimen of blood withdrawn from a vein at the commencement of a rigor. This culture was sent to Sir A. E. Wright and from it a vaccine was prepared. Meanwhile, on Feb. 16th, 17th, 18th, and 19th doses of ten cubic centimetres of antistreptococcic serum were again given. On Feb. 21st uterine extract was added to the treatment as the menstrual function was in abeyance, and this extract was continued until she was practically well.



From March 7th to 9th phlebitis was marked. Continuous line represents the mean of six observations of temperature. Dotted line represents the opsonic index.

The daily temperatures from Jan. 15th to Feb. 21st showed a range of from 3° to 5°; the daily minima were usually between 99° and 101°, while the daily maxima were always 103° or higher, except on Feb. 12th and 18th, when the maxima were respectively 102·8° and 102·2°. Maximum temperatures of 104° and upwards but not reaching 105° were recorded on 15 days. Temperatures of 105·0° and 105·2° were recorded on Jan. 15th and Feb. 1st, 2nd, 4th, 10th, 11th, and 21st. On Feb. 22nd the first dose of vaccine was injected after the opsonic index had been examined and found to be 0·4. Reference to the chart will make the following remarks clear. In this chart the continuous line represents the mean daily temperature obtained by averaging six daily observations; the black arrows represent the inoculations of antistreptococcic sera; the dotted arrows those of the

vaccine. The dotted lines represent the curve of the opsonic indices. The inoculations of the various antistreptococcic sera had no effect, either good or bad, on the mean daily temperature, neither did they appear to have the slightest beneficial effect on the opsonic power of the patient's serum, for the index, taken on Feb. 21st, was only 0·4, in spite of the fact that ten cubic centimetres of serum had been given every day for the six preceding days.

After an inoculation of 10,000,000 dead streptococci, which was in the vaccine used the number of cocci contained in $\frac{1}{10}$ cubic centimetre of a 24-hour broth culture, the opsonic index rose without any appreciable negative phase in eight hours to 1·4 and remained above the normal line for the three following days. During this period the mean daily temperature shows a marked fall. On the opsonic index reaching the normal line another inoculation was given, the dose being 12,500,000. This inoculation was followed by a very slight negative phase, after which, however, the index rose rapidly to 2·1, to fall with equal rapidity to 1·3 on the third day after the inoculation. In order to attempt to keep the index above the normal for as long a period as possible another inoculation was now given, the same dose as the last being employed; and as but a very slight negative phase had been produced this dose was repeated the next day. On March 3rd (the day following the inoculations) the index was normal but rose rapidly to 2·4, keeping above the normal line for the next six days. The mean daily temperature, which up to March 2nd had steadily fallen, rose, reaching the level occupied before inoculation was commenced. On March 6th it was, however, noticed that a thrombus was commencing to form in the left iliac and femoral veins. To prevent the spread of the thrombus and to secure, if possible, the shrinking of the clot and the re-establishment of the circulation through the veins, large doses—from 30 to 60 grains—of citric acid were given every four hours. This treatment was so successful, apparently, that there was at no time any marked degree of œdema in the limb affected; this showed that the circulation had been speedily re-established. Coincidently the temperature again dropped. A further inoculation of 12,500,000 was given on March 8th as the opsonic index had dropped to 0·7. On March 11th the index had risen to 1·39, when another similar dose was given. This caused a slight negative phase but the power quickly rose to 2·0 on March 14th, on which day a further inoculation of 6,000,000 was given. This caused a very distinct fall in the opsonic index and unfortunately a dose of 6,000,000 was again given on the 16th, which caused the index to drop below the normal line and the temperature, which had remained normal for 24 hours, to rise above 105° for a short period. This return of fever was, however, only temporary, for with the rise of the opsonic index the temperature again became normal and there was no further rise—it was an instructive little episode to us, although a somewhat alarming one for the patient and her friends. The daily temperatures from Feb. 22nd to March 14th showed as before a range of from 3° to 5°; the daily minima were either 98° or 98·4° except on Feb. 26th and 27th and March 1st and 13th, when the minima were respectively 97·6°, 97·8°, 96·6°, and 95·8°; the maxima were usually between 101° and 104°. Up to March 14th the temperature was pyrexial with a maximum of 103° on the day mentioned, but on the 15th it became normal, as already stated, with a maximum of 99°. On the 16th, as already explained, it rose to 105°, but it did not subsequently exceed 99°. Two more inoculations were given on the 21st with the same rise of the opsonic index. On the 26th and 29th blood examinations were made to ascertain whether the index showed a tendency to drop below the normal level, but on both occasions it was found to be normal; consequently no further inoculations were given. The patient's convalescence was uneventful. She entirely recovered from the effects of the pleurisy. A little support, by bandaging, was given to the leg after she got about and this cannot yet be discarded without the leg swelling. The dilated right heart returned to its normal size and the murmur and incompetency at the tricuspid orifice disappeared. The left ventricle, which during the long febrile illness had become dilated, returned to a normal size, and there was no physical evidence of heart disease left. The albumin entirely disappeared from the urine and the menstrual function was restored. Throughout her long illness the patient's bright mental condition was noteworthy, as was her ability to eat solid food in fair quantity. One of us has heard recently from the patient, who has been staying in the country since her illness, to the effect that she feels perfectly well in every way.

In conclusion it may be permitted to say that it is probable that not even the most sanguine believed when therapeutic inoculation was first introduced that it could be usefully applied to the treatment of septicæmic diseases; at any rate such was the opinion of both Sir A. E. Wright and one of us working in conjunction with him. The type of septicæmic disease referred to is that condition in which the bacteria are from time to time washed into the blood stream from some infected focus, to be quickly removed from it most probably by phagocytosis, and not to those conditions in which the bacteria are actually multiplying in the blood; this latter condition being but rarely found except before the death of the invaded organism.

The problem before us in these septicæmic cases is whether the presence of an area containing living and multiplying bacteria which from time to time have free access to the blood stream, is at all favourable for the manufacture of antibacterial substances by the infected organism or whether a more efficient production would take place if the bacterial products were brought into actual contact with the cellular tissues and had to pass through the lymph stream before reaching the general circulation. It is very generally known that a very much larger degree of immunity is obtained in horses against diphtheria toxin by means of subcutaneous and intramuscular inoculations than by intravenous inoculation of the same or even much larger amounts of this toxin; and, in fact, it is the practice of all those—at any rate, in this country—who have experience in the production of sera for therapeutic purposes to employ the subcutaneous rather than the intravenous method of inoculation except in those cases—e.g., in the production of anti-plague sera—where any accidental abscess which might arise would be a source of danger to man. A possible explanation to these facts might be that when the bacteria and their products are introduced directly into the blood stream the enormous dilution thereby produced would tend to diminish the production of antibodies, whereas in the subcutaneous inoculation the concentrated vaccine is brought directly into contact with the cells of the subcutaneous tissue and the lymph. Further, in lobar pneumonia it has been shown by Macdonald, working in Bulloch's laboratory, that the opsonic power of the serum is at a low level during the whole period of high temperature; yet it is known from the researches of the Italian workers that cultures of pneumococci can be obtained from the blood during the whole of this period. The practical application of these ideas was worked out by Wright in a series of cases on Malta fever, a disease in which, even in its most chronic form, bacteria are commonly found in the blood stream. It was found that in those cases of Malta fever which had become chronic there was a deficient production of antibodies and that when a small dose of vaccine—prepared by killing an emulsion of micrococcus Melitensis with heat—was inoculated under the skin a temporary increase of antibodies was invariably obtained; also that, by means of repeated inoculations made at suitable intervals, these intervals being judged by blood examinations, the antibody content of the blood was maintained at a high level for a sufficiently long period to bring about a cure of the disease. In continuation of this work Reid has carried out the treatment of a further series of cases of chronic Malta fever at the Naval Hospital at Chatham with uniformly good results. The case of malignant endocarditis due to an infection by streptococci (with which this paper is concerned) and in which recovery took place after a series of inoculations of a vaccine made from a culture of streptococci obtained from the patient's blood affords proof of the utility of this method of treatment in a species of septicæmic disease to which it had not been previously applied. We have, therefore, considered it our duty to place on record the details at some length.

ROYAL FREE HOSPITAL, LONDON.—The annual court of governors will be held at the hospital on Monday, Feb. 25th. The chair will be taken at 4.15 P.M. by the Earl of Sandwich, chairman of the committee of management, when the annual reports and accounts will be presented. The governors and their friends are invited to inspect the wards and the various departments of the hospital during the afternoon.

A NEW METHOD OF FIXATION OF THE BONES IN EXCISION OF THE KNEE.

BY ERNEST W. HEY GROVES, M.D., M.S. LOND., F.R.C.S. ENG.,
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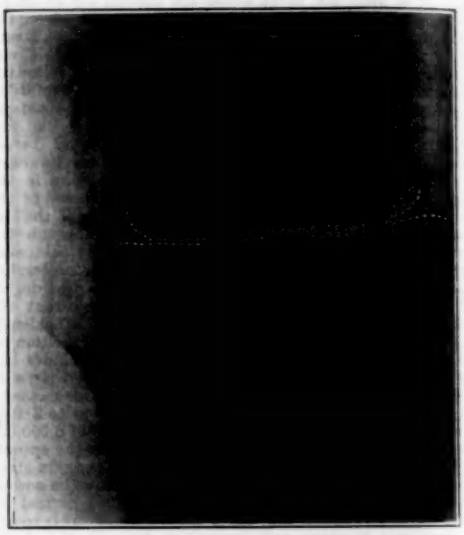
IN the great majority of cases where a surgeon excises the knee-joint he aims at producing firm and immoveable union between the femur and tibia. Of course, in some cases, especially with patients of tender years and surgeons of sanguine temperament, an attempt may be made by removing the minimum of diseased tissues and by preserving the lateral ligaments to retain a moveable joint. With such cases I am not concerned here. But apart from those instances where a deliberate attempt has been made and has failed to produce mobility, there are many where the object of absolute fixation has not been attained and in both cases the result is much the same—namely, a fibrous union in place of the joint, which is weak, painful, unsteady, and very liable to undergo flexion. So that there can be no difference of opinion about the desirability of producing absolute bony ankylosis and of avoiding fibrous union when the joint has been sacrificed. If this can be done then the patients can be told that the operation, though it will leave them with a stiff knee, yet it will be a strong and painless one, requiring no splint or appliance.

Now it is quite evident from a study of writings and text-books on this subject that great difference of opinion exists as to the best method of obtaining absolute fixation of the bones. According to some, no special device is required at all, the raw surfaces of bones growing together without fixation. Others depend on special kinds of splints, whilst the majority find it necessary to employ periosteal stitches, silver wire, screws, nails, or pegs. It may be granted that very often these devices, or the absence of any device, produce a very good result, but in every case there is a great uncertainty, simply because not one of such methods is mechanically adequate for the purpose for which it is intended. The difficulties to be surmounted are two-fold. First, to get the cut surfaces of the bones to lie in accurate apposition to one another; and second, to keep them there. Even if the parts are left in good position after the operation, it is almost impossible to avoid moving them when the dressings are done; and the inadequacy of the fixation by wire, screws, or pegs results from the fact that the ends of the bone consist of soft cancellous tissue, which affords no secure hold for any of these things. And the very slightest movement of the leg when the dressings are changed will, by the great leverage used, bring a great strain on the parts.

My first illustration shows these points very clearly. It is from the case of a man, aged 37 years, who for 15 years had had pain and stiffness of the right knee. He had seen many eminent authorities in London, Edinburgh, and the provinces, but there had been so much difference of opinion about the diagnosis and treatment that he had no encouragement to submit to any one of them. But as the pain had become much worse lately he was anxious again to consider the possibility of cure. I was fortunate enough to gain his confidence and make certain of the diagnosis by an experimental injection of 0·005 cubic centimetre of Koch's tuberculin. This sent the temperature up to 104° F. and produced increase of heat and swelling in the joint, and excision was accordingly undertaken on May 7th, 1904. Extensive caries of all three bones of the knee-joint necessitated very free resection, about one and a half inches of the femur and three-quarters of an inch of the tibia being removed. Two three-inch screws were passed through the hollows on either side of the anterior tibial tubercle and screwed into the lower end of the femur. They held well. The immediate progress of the patient was all that could be desired. The stitches were all taken out by the fourteenth day and the temperature never rose above 99°. His leg was kept in a splint for six months. In the following September the skiagram which forms the illustration was taken. In spite of the two long screws there was decided mobility at the union of the bones. The screws had both moved and the head of one formed a tender swelling under the scar, and therefore both were removed under an anæsthetic. To this day the patient has to wear a leather splint round his leg without which flexion would inevitably occur.

A reference to Fig. 1 makes it clear why it is so difficult to make any kind of screw or nail hold the bones together firmly. The head and shaft of the screws have passed through the compact tissue of the shaft of the tibia, but the threads of the screws lie in the cancellous tissue of the femur. And it is impossible to make them occupy any other position. Now, cancellous tissue at the best is very friable, and when the bone has undergone the rarefying osteitis which so often accompanies disease it is quite soft. The inner screw, which lies nearer to the compact bone of the femur, is seen to have retained its position better than the outer, which lies in the middle of the bone. It is evident that in order to get a firm grip of the bone the compact tissue must be perforated in the case of both bones. Moreover, as anyone knows who has used screws for this operation, after the screw has been driven home it can still be rotated indefinitely if very little extra force be used, thus showing that the thread is not holding in the femur. So

FIG. 1.



Skiagram of knee-joint six months after excision. The screws which had been used are seen to have partly come out and the original skiagram also shows a gap between the bones occupied by fibrous tissue and shown here by dotted lines.

that, however screws may act as pegs, they cannot be used to draw the two raw surfaces of bone tightly against one another.

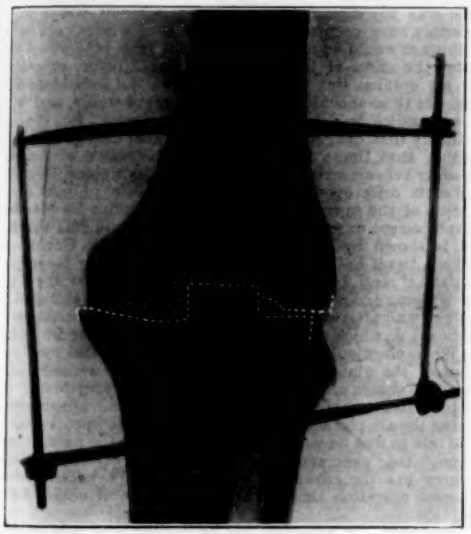
It was this case which made me devise the following apparatus which gives a more adequate mechanical control over the bone ends. Two rods are passed horizontally through the femur and the tibia about two inches in each case from the line of section. Each rod is one-eighth of an inch in diameter and six inches long. The projecting ends are then drawn together by two vertical rods provided with screw threads and nuts. These can very quickly be tightened up by a box spanner. When the apparatus is in position and firmly screwed up the bones are immoveably fixed and, as a matter of fact, the whole leg can be lifted up when the femur is raised as though the bones were part of a continuous shaft. Of course, one would not put the bones to this severe test in an actual operation, but the fact can be readily demonstrated in the dead body. The final tightening of the screw-nuts can be done after all the stitches are put in and the leg is on a splint and the two surfaces of bone can be securely pressed together so that the occurrence of a fibrous zone between them is impossible. Each of the transfixing rods has a point and screw thread at one end and an eye one-eighth of an inch in diameter at the other. The lateral rods are similarly made. Each transfixing rod has one connecting rod passing through its eye and its point passes through the eye of the opposite connecting rod. The skiagram (Fig. 2) will make this clear.

When I first used the apparatus I employed an ordinary bone drill and then pushed and screwed the transfixing rods into the hole so made in the bone, but now I have the transfixing rods shaped with a sharp cutting end like a bradawl and I can make the hole for the rod with the rod itself. This saves time, as it was often very difficult to find the hole made by the drill when the rod had to be passed from the soft tissues into the bone and from the bone through the soft tissues on the opposite side. The points where the transfixing rods pierce the skin are sealed with collodion and the whole apparatus is inclosed in dressings. The fixing rods are removed under gas at the end of a fortnight.

One more point deserves attention. In most cases the femur is diseased at a higher level between the condyles than elsewhere and the tibia is destroyed at a lower level over the tuberosities. Therefore a plane section through the farthest limit of disease in both bones will remove a good deal of healthy condyle from the femur and of sound tibia in the region of its spine. This can be avoided by cutting a kind of mortise joint shaped like ⌐¬ instead of a plane section of both bones. This will give a thorough removal of the diseased areas with less sacrifice in the length of the bones than the ordinary method. Further, it will afford a much larger area of contact of the raw bone surfaces and apart from the fixation apparatus will make a fibrous union almost impossible.

Fig. 2 is a skiagram of the first case in which I used this mortised-joint method. I must admit that the union shows rather bad joinery, but the man, who is 32 years old, had a very good leg with firm, bony union, not requiring a splint from the time (six weeks after the operation) he got out of bed. In this case I only used my eye to judge the lines for the mortise, but since then I have had a little

FIG. 2.

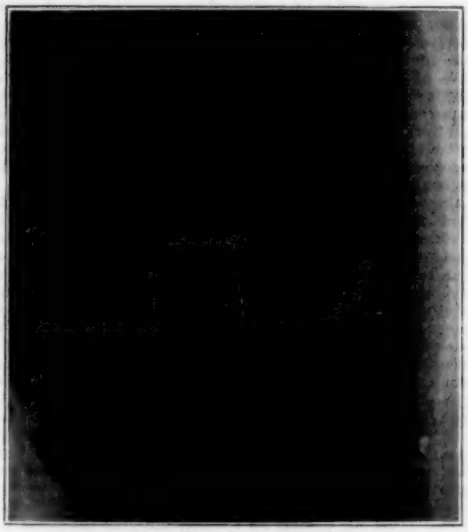


Skiagram of a knee-joint ten days after excision, the fixing apparatus being still in position. The dotted lines show the mortise joint.

tin gauge made which serves to mark out accurately the line of section on both bones, and Fig. 3 shows, I think, an improvement effected by this device. I have before me a skiagram of the knee of a servant girl, aged 20 years, whose joint was excised for tuberculous disease of three years' duration. The skiagram was taken three weeks after the operation after the fixation apparatus had been removed. The union of the bones is seen to be all that could be desired and there remained only one and a quarter inches shortening of the whole leg.

The apparatus has one more advantage and that is that it keeps the parts so immobile that the limb can be carefully moved from the splint without causing the patient any pain. In the ordinary method it is impossible to move the limb from the splint without causing some movement between the bones and this is a matter of great anxiety to the surgeon and of torture to the patient.

FIG. 3.



Skiagram of a knee of a girl, aged 20 years, three weeks after excision for tuberculous disease. The fixation apparatus has been removed and the union between the bones is so close that the mortise joint can barely be traced and is shown by a dotted line.

In conclusion it may be fairly claimed for this operation: (1) that it fixes the bones together more firmly and more rigidly than any other method because the fixation acts upon the dense bone of the shaft and not upon the cancellous tissue; (2) that the bones are transfixed and held at points well away from the diseased area; (3) that the final fixation and tightening can be effected after the wound is sewn up and the leg is on a splint; (4) that it saves the patient a great deal of pain in the dressings; and (5) that it leaves no foreign bodies in the bones which may have to be removed by a subsequent operation.

Clifton, Bristol.

SOME AFFECTIONS OF THE PANCREAS.

BY SIDNEY PHILLIPS, M.D. LOND., F.R.C.P. LOND.,

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(Concluded from p. 422.)

III.—ACUTE PANCREATIC CATARRH.*

ACUTE pancreatitis is divided by Fitz[1] into two forms, "one presenting a combination of inflammation and hæmorrhage, the more frequent termination of which is gangrene, the other is independent of hæmorrhage and is characterised rather by suppuration than by gangrene." Mayo Robson[2] distinguishes three forms of acute pancreatitis: (1) acute; (2) subacute; and (3) catarrhal. He further subdivides the acute into hæmorrhagic, gangrenous, and suppurative forms; the subacute he indicates as forming a localised abscess and the catarrhal he divides into simple catarrhal and suppurative catarrhal forms. I shall speak here only of the simple catarrhal form.

Etiology.—It is due in many cases to infection spreading along the ducts from cholelithiasis; in some cases it is set up by pancreatic calculi. But calculi are not present in all cases. I think that Mr. Robson's suggestion that catarrhal

* The tables referred to in the text were published in THE LANCET of Feb. 16th, 1907, pp. 420, 421.

[1] Clifford Allbutt: System of Medicine, vol. iv., p. 264.

[2] THE LANCET, March 26th, 1904, p. 845.

pancreatitis accounts for many cases of so-called catarrhal jaundice by compression of the common bile-duct has hardly received the attention it deserves. Hilton Fagge long ago expressed doubts as to the sufficiency of the usual explanation that catarrhal jaundice originates in gastro-duodenal catarrh, spreading up the common bile-duct or occluding its orifice by a plug of mucus. And most writers on the subject appear to accept this explanation with much reserve. Frerichs[3] records a case in which a plug of mucus was found post mortem in the orifice of the bile-duct in a case of jaundice and peritonitis. Osler records another. But it appears very unlikely that such a plug of mucus or a catarrhal state of the bile-duct can so completely occlude it as to prevent entry of any bile into the intestine for a period of weeks or months (Chauffard,[4] quoted by Rolleston, records a duration of five months); notwithstanding the peristaltic powers of the wall of the duct, proved by Laborde[5] to be sufficient in a dog to force gall-stones in the duct onwards into the intestine and backwards into the gall-bladder. Nor are the clinical evidences of the supposed gastro-duodenal catarrh at all convincing. Flatulence, pain and fulness after food, nausea, heartburn, &c., which are assumed to denote it, are common to almost any disturbance of the digestive organs in this region; moreover, the jaundice often comes on without these symptoms; the affection may arise from gout, syphilis, or in the course of infectious fevers, without anything whatever to indicate duodenal catarrh; sometimes it is accompanied by considerable pyrexia; it may pass off in a few days or last many weeks or even months or not clear up at all. If it clears up quickly the diagnosis of gastro-duodenal catarrh is taken as proved; but "when it lasts more than six weeks the diagnosis of catarrhal jaundice should be seriously questioned and some other cause sought for."[6]

There seems no good reason for assigning to the cases which clear up quickly an entirely different causation from those that are more persistent; on the contrary, it seems more probable that the cases which clear up are due to the same cause as those which do not. In the latter this cause has now been frequently shown by operation to be an inflammatory swelling of the head of the pancreas; in one case in which operation was performed after only four weeks of jaundice a piece of the pancreas was removed and catarrhal pancreatitis shown. And Mr. Robson asserts that in some cases of the so-called "catarrhal jaundice," the enlarged head of the pancreas may be felt by palpation through the abdominal wall. The conditions which have been observed to be associated with catarrhal jaundice, gout, syphilis, and infectious fevers are known to be capable of setting up parotitis, and it is quite possible therefore that they may also produce pancreatitis, for an association between parotitis and pancreatitis has been noted by several observers and the two glands are closely allied in structure and function. The hypothesis of gastro duodenal catarrh dates from a period before pancreatic diseases had received due recognition, and appears a much less probable cause for the jaundice than an inflammatory swelling of the head of the pancreas. And possibly "epidemic catarrhal jaundice" is due not to an epidemic form of gastro-duodenal catarrh, of which no evidence exists, but to an infectious form of pancreatitis similar to the infectious form of parotitis known as mumps. The two cases C and D in Table I. are examples of jaundice commencing with symptoms indistinguishable from those usually described as denoting catarrhal jaundice; in each of them operation—in one case very soon after—showed inflammatory enlargement of the head of the pancreas, and in Case D at any rate any supposition of duodenal catarrh appears superfluous. The form of pancreatitis to which catarrhal jaundice is attributed is the simple catarrhal form, but probably the inflammation in such cases is not entirely restricted to the ducts. The condition appears to be that described by Fitz, in which the pancreas "is the seat of such parenchymatous changes as granular degeneration of the cells, multiplication of the nuclei, and swelling of the gland. These conditions have been observed in the infectious fevers."[7] He adds they are incapable of clinical recognition, but such a condition when affecting the *head* of the gland may probably produce jaundice.

Symptoms of acute catarrhal pancreatitis.—Where due to calculi there will be possibly present, in addition to jaundice, pain and other symptoms special to them. Where no calculi are present, if, as is suggested, catarrhal pancreatitis is the cause of many cases of so-called catarrhal jaundice, the symptoms described of that affection may be taken as indications of catarrh of the pancreas. And possibly in some cases swelling and tenderness over the head of the pancreas may be detected.

IV.—TREATMENT.

Treatment of acute and chronic catarrhal pancreatitis.—When due to calculi in the biliary passages the treatment is that for calculus and the same may be said of calculi in the ducts of the pancreas. When there is no reason to suspect calculi the treatment which has been found useful in catarrhal jaundice—whether that be due to gastro-duodenal catarrh or to pancreatic swelling—is to be followed. Light diet, salines, salicylate of soda, and continued administration of mercurials in small doses are of benefit, and possibly mercury has a specific action upon the pancreas as it has upon the parotid secretion. In most cases the jaundice clears up in from three to eight weeks, in some cases not for ten weeks, and cases are recorded in which even a longer time has elapsed. But when it persists so long the danger of biliary toxæmia becomes great.

In some cases benefit may be expected from antisyphilitic treatment and mercury may possibly have a beneficial effect even in non-syphilitic cases of fibroid pancreas. Mr. Robson advises administration of pankreon or of liquor pancreaticus. The possibility of the subsidence of the disease spontaneously or under medicinal treatment should not be overlooked, and operation should only be resorted to when this appears impossible or when threatening symptoms arise. Operation has sometimes, in my opinion, been performed too early; in one reported case the gall-bladder was drained four weeks after the onset of jaundice; two weeks later, it is stated, the bile was flowing into the intestine—a result which would possibly have occurred in the same time without operation. I think it would be of interest to learn from others how long after the onset of jaundice should elapse before operation; in my opinion this must depend upon the individual case, but the time should not be less than eight weeks, and when the jaundice is not very intense even longer, for it seems unlikely that danger of interstitial fibroid change will arise within that time; if, however, the distension of the gall-bladder become extreme or threatening symptoms of biliary toxæmia arise operation should not be delayed. As to the nature of the operation, if pancreatic calculus be found its displacement or removal is indicated: how difficult this may be is shown by the cases recorded by Pearce Gould[8] and others, but it has been successfully performed by Moynihan,[9] Dalziel,[10] and by Robson.[11] In Robson's cases the ducts of Wirsung and Santorini were each opened for removal of the calculi and afterwards successfully sutured, an operation the delicacy of which can be appreciated even by the physician.

When no calculus is present mere exposure and manipulation of the gland would not, I imagine, be recommended. And the choice of operation lies between cholecystotomy and cholecystenterostomy. The former has the advantage of being the simpler operation and of giving an opportunity for the bile to find its way into the intestine by the natural route should the pancreatic swelling subside. Cholecystenterostomy has the advantage of obviating the necessity for a second operation should the pancreatic obstruction fail to subside.

But cases are recorded, one by Barling,[12] of relapse after cholecystenterostomy from contraction of the opening into the intestine. Another case[13] is recorded of death from abscess in the liver two months after operation. In two of my cases death occurred from this cause: in Case F (Table I.) 20 months after operation from scattered liver abscesses; in Case E (Table I.) from suppurative pylephlebitis two and a half years after operation. In both these cases post mortem the part of the gall-bladder left at the operation had formed a sac or reservoir from which bile had probably during life only poured out by overflow. Apparently the residual bile in this sac had become infected and had given rise to the suppuration in the liver. In one of these patients there had

[3] Diseases of the Liver, vol. ii., p. 441.
[4] Traité de Médecine, vol. v., p. 97.
[5] Naunyn: Cholelithiasis, p. 65.
[6] Rolleston: Diseases of the Liver, p. 660.
[7] Clifford Allbutt: System of Medicine, vol. iv., p. 264.
[8] Transactions of the Clinical Society, vol. xxxii., p. 59.
[9] THE LANCET, vol. ii., 1902, p. 355.
[10] Brit. Med. Jour., vol. ii., 1902, p. 1314.
[11] THE LANCET, April 2nd, 1904 p. 913.
[12] Robson-Moynihan, Diseases of the Pancreas, p. 164.
[13] Ibid, p. 174.

been indications of this during life, for though well enough to perform his duties as a constable he had from time to time attacks of jaundice which quickly passed off on the administration of a dose of calomel. Perhaps this tendency is unavoidable, for it is impossible for the surgeon to devise so perfect an automatic mechanism for storage and intermittent distribution of bile as the gall-bladder with the cystic duct so curved upon itself that bile does not run out with mere changes of position, but yet is readily expelled at the requisite moment. If I might presume to make a suggestion, it is that when cholecystenterostomy is performed as little of the gall-bladder should be left unremoved as possible. I should like to ask whether it or simple cholecystotomy is advisable in the first instance. And if the latter is to be preferred I should like to ask how long should be allowed to elapse before the gall-bladder is united to the intestine, if that should become necessary. In one of my cases the surgeon connected the gall-bladder with the colon; the patient always afterwards suffered from a most troublesome diarrhœa resulting from the entry of bile so low down in the intestinal canal. And it seems far preferable to unite the gall-bladder with the small intestine.

The effect of operation on averting possible subsequent diabetes is not known. Mr. Robson records a case in which only manipulation of the pancreas was practised and though jaundice passed off diabetes eventually came on. The same sequence occurred in Case A (Table I.). Mr. Robson suggests that possibly drainage of the gall-bladder might avert diabetes, but in a case recorded by Moynihan of drainage of the gall-bladder diabetes followed. In this case it should be mentioned that there was polyuria before the operation. At present we know little of any pre-diabetic stage of diabetes and it is not possible to foretell whether a given case of pancreatitis will or will not go on to diabetes. In Cases A and C (Table I.) the urine had repeatedly been found normal for a long time before glycosuria appeared. Of the effect of operation when diabetes is already present we have no information, but I imagine it would be a very unfavourable condition for operation; in Case C (Table I.), in which there was abscess in the pancreas, death from diabetic coma supervened almost immediately after operation.

Upper Brook-street, W.

A PRELIMINARY NOTE ON RINNÉ'S TEST.

By RICHARD LAKE, F.R.C.S. ENG.,
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THE difficulties which are met with whilst attempting to separate the various conditions of hardness of hearing and deafness occurring without suppuration in the middle ear are so great that few Englishmen have up to the present had the temerity to write on this subject. This I may exemplify by the fact that in a brochure on Fixation of the Stapes by Dr. Arthur Stern, published in 1903, not a single Englishman was mentioned as having said one word on tuning-fork tests. I use the word *temerity* because it seems to me that the more time and attention one devotes to the difficult, interesting, and intricate problems which continually unfold themselves the more one's knowledge increases, the more frequently one must modify or even change one's views. For this reason I am quite convinced that in a relatively short space of time I may have reason to modify to some extent the views I now hold, although I believe that these views would now generally be acknowledged by those acquainted with the subject to be in the main correct. For my own part, I am quite willing to make mistakes if those mistakes are made through a conscientious representation of my views, if by so doing I can assist in removing the imputation which rests on British aurists of incomplete knowledge in these matters and assist in inducing the younger generation of aurists to see the enormous advantages which are to be obtained by a close study of tuning-fork tests.

To commence with, Weber's test may be left entirely out of consideration. It is quite useless and is often misleading, except in cases of hysteria and malingering. The test which I propose to consider in detail is that which goes by the name of Rinné, and might perhaps be better now termed the proportional test of air to bone conduction, and as such I shall employ it. This proportional test, which up to the present time has been considered as one single test, must be subdivided into six. When the proportion of bone conduction to air conduction continues to maintain much the same relation to each other as in the normal ear it is termed positive, which will be designated by a capital P in the following table. That is to say, the tuning fork is heard by the air after it has ceased to be heard through the bone. When the contrary condition occurs and the duration of the bone conduction is so great that the fork is no longer heard by the air the term used is negative and is denoted by the letter N. These subdivisions will be as follows, B.C. being used to indicate bone conduction and A.C. air conduction:—

			Result.	Test symbol.
B. C. normal.	... A. C. reduced.	...	P.	... α
B. C. normal.	... A. C. absent.	...	N.	... β
B. C. increased.	... A. C. normal.	...	P.	... γ
B. C. increased.	... A. C. reduced.	...	N.	... δ
B. C. diminished.	... A. C. normal.	...	P.	... ϵ
B. C. diminished.	... A. C. diminished.	...	N.	... ζ

The fourth and sixth admit of slight variations.

Now it will be seen from this list that the individual who seeks for definite information from Rinné's test is likely to fall into numberless errors on account of the complexity of the issues. Another fertile source of error has been produced by the pernicious influence of those aurists who employ and teach the use of Gardiner-Brown's tuning-fork, a most unreliable and unscientific instrument.

With Rinné's test alone we shall find it impossible to further our scientific classification. We must take in conjunction with the proportional test the conversational voice, the lowest whispered voice, the acoumeter, and some corroborative test if necessary, when we wish to demonstrate fixation of the stapes. This, however, need not delay us at the present time. I trust within the course of a few weeks to place before the readers of THE LANCET a more detailed statement of my views and it is in that article that I shall lay myself open to those failures to which I have alluded. But perhaps it is well that I should say at this time that the reasons for using an acoumeter instead of a watch are not so much that the length of estimated distance at which a watch can be heard makes it difficult to employ it as a test for hearing as the fact that the tick of the watch varies as much in pitch as in volume. Thus we might be testing an ear with a watch of higher or lower pitch than the one which had previously been employed, and it must frequently occur that one of those notes is just outside the range of hearing of the individual being tested, whereas the acoumeter, giving forth an unmusical sound, and being mechanically incapable of more than a certain volume, will give the same results in whosesoever hands it is and thereby enables men, wheresoever they may be situated, to communicate results which can be understood and appreciated by others.

Harley-street, W.

CELLULITIS OF THE SPERMATIC CORD

By FRANK COLE MADDEN, M.D. MELB., F.R.C.S. ENG.,
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WE have recently had an experience of a series of cases the symptoms in which closely resemble those of strangulated hernia, but which, on operative investigation, may best be described under the title at the head of this paper. In two of the cases the patients affirmed that they had suffered for many years from a hernia, which, with the onset of symptoms, apparently became swollen and irreducible. In both instances we were able to demonstrate an empty hernial sac in the centre of the swollen inflamed tissues about to be described.

The patient usually complains of severe pain in the scrotum and around the lower part of the abdomen on the affected side, with constipation and some vomiting, which, however, is not usually a prominent symptom and is generally remarked only at the first onset. The temperature is raised and the general condition may be decidedly bad. On examination the side of the scrotum appears to be filled with a large rounded swelling which runs right into the region of the external ring—in fact, presents all the appearances of an

irreducible inguinal hernia. On palpation, it will be noted that the skin is œdematous and the swelling is hard, but doughy on firm pressure, runs well down into the scrotum, and cannot be reduced. There is no impulse on coughing and the whole mass is dull on percussion. The general impression in such cases is that it is impossible to be sure whether we have to deal with strangulated hernia or not, but in any case immediate operation is the proper treatment. An incision is then made over the lower part of the abdomen and the neck of the scrotum, through a markedly œdematous skin, and several layers of thickened infiltrated œdematous structures are divided but still no gut is found nor even clear fluid within a sac. Finally, after separating off all the different layers, which are firmly glued together by lymph, a thick inflamed rope-like structure is met with which runs distinctly up into the abdomen through the internal ring. On removing this cord between ligatures, the upper one as high up as possible, it is seen that it consists of a much infiltrated spermatic cord, the veins in which are all thrombosed and filled with purulent clot, while the rest of the structure is thickly studded with small abscesses, or rather collections of pus scattered throughout a kind of spongy tissue in its whole length. On the removal of this portion of the cord an elongated hernial sac of thickened inflamed peritoneum, its serous surfaces adherent with lymph, may sometimes be found and ligatured off at the level of the internal ring.

On the completion of the operation a gutter is left, formed by the opening up of the inflamed coverings of the cord and scrotum, and this is packed with gauze and the whole wound is allowed to granulate up from the bottom. The testicles are not affected as a rule, but, as their functions must be quite abolished by the block in the cord, they are usually removed, a procedure which materially simplifies the subsequent course of treatment of the case. After running a modified septic course the patients usually do very well, but I have seen one fatal case in which death was due to septic absorption, owing, I think, to extension of the suppurative process along the retro-peritoneal tissues with a diffuse septic cellulitis in this situation. In other cases there have been symptoms of local peritonitis after the operation, but the intestinal symptoms, especially the constipation and vomiting, have almost immediately improved.

I can offer no suggestion as to the cause of this condition and have been unable to trace any connexion between it and septic foci in other parts of the body. Whether it is primarily a phlebitis with septic thrombosis of the veins of the spermatic cord I cannot say, though why this should occur without some original septic infection is not quite clear. It adds yet another condition to be considered in the differential diagnosis of strangulated hernia, and I do not expect to be thanked by the present-day overworked student for having thus drawn attention to what to me was until recently quite a novelty.

Cairo.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

NOTE ON A CASE OF HYDRONEPHROSIS WITH URETHRAL SEPTUM CAUSING OBSTRUCTION TO URINARY OUTFLOW.

BY G. S. THOMPSON, M.R.C.S. ENG., L.R.C.P. LOND.,
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THE following are some notes in reference to a case of morphological and pathological interest which was under the care of Mr. T. Noy Leah at the Royal Albert Hospital. The history obtained from the parents was not very detailed.

The patient was a boy, aged 14 months. Constipation had been present for three months. Micturition was associated with straining and protrusion of the rectal mucous membrane, whilst at the same time the child also cried and more recently had, in addition, been observed to raise the right leg. The parents stated that latterly "pus" had been noted in the urine. Sleep had also become disturbed, the child being restless and at times indulging in a degree of screaming that suggested the possibility of an intussusception being present. Nothing amiss in the child's health was apparent until he was nearly one year old. On admission a smooth globular swelling was felt immediately above the pubic region; the temperature and pulse-rate were both somewhat raised. The child was anæsthetised with chloroform and a low abdominal section was performed. On exploring the lower part of the abdomen an elastic, resistant mass was felt in the pubic region, occupying exactly the position of the bladder. Owing to the slight fluctuancy of the mass a needle was inserted but with difficulty; nothing was withdrawn. The tumour was next incised and after cutting through about a quarter of an inch of tissue a small cavity was revealed. This proved to be the bladder cavity, as was shown by meeting a catheter that had been passed per urethram. The passage of the catheter previously to the commencement of the operation not only failed to reduce the size of the swelling but also to allow of any urine being expelled. A small drainage-tube was stitched into the wound and the child was sent back to bed. He died, however, on the next day.

At the post-mortem examination the following interesting condition of things was found. The kidneys were almost of the size of those of a young adult. A longitudinal section showed this to be due to hydronephrosis; the hydronephrotic fluid was turbid, this being caused by the presence of a small quantity of pus. The ureters were markedly dilated, having an appearance which closely mimicked small intestine, not only in the appearance of their walls but by their convoluted state; they were in fact at first mistaken for the small intestine, although their anomalous position for such was remarked. Both kidneys and ureters were distended to an equal degree. The openings of the ureters into the bladder were normal. On cutting open the bladder the marked hypertrophy of its wall was very striking. The mucous membrane presented a shaggy aspect, whilst an ecchymotic condition of the ends of some of these villous-like processes was evident. On excising the urethra and slitting it open nothing at first was noted therein and the cause for the obstruction was not forthcoming. On subsequent examination, however, a diaphanous membranous septum, lying flush with the wall of the open urethra, was seen. A small opening must have existed in this, but that it was small was shown by the fact of the membrane appearing nearly complete. The site of this septum was about the junction of the urethral orifice of the bladder and the first portion of the urethra. Thus during the normal condition of the parts a diaphragm must have been present across the urethra with a small central aperture. The small catheter which was passed into the urethra may have caused a traumatic enlargement of the aperture of the septum.

The interest of this case lies partly in the preservation of the example of arrested development detailed above. Presumably this septum must be the structure formed by the meeting of the cloacal hypoblast and the invaginating perineal epiblast analogous to the anal and hymeneal membranes. It is strange, however, that the quondam presence of this part is not mentioned positively in the ordinary works on morphology and surgery—at least, one cannot recollect having read of it. Its presence, however, may, or would seem to, be implied, although not actually stated in so many words, by such expressions as congenital urethral obstructions given, amongst other things, as a cause of hydronephrosis. Again, the comparatively late onset of some of the symptoms, assuming that the statements of the parents can be relied on, may possibly be accounted for by renal inadequacy. The genito-urinary organs of this case were sent to the Museum of the Royal College of Surgeons of England.

Devonport.

NOTE ON A CASE OF BLEEDING TELANGIECTASIS.

BY WILLIAM BLIGH, M.D., B.S. LOND

A MAN, aged 32 years, came running into my house in November, 1906, holding a blood-soaked handkerchief upon his left forearm and with his shirt and clothes drenched with arterial blood. Upon removing the handkerchief and mopping away the blood I found a minute nævoid growth from which arterial blood was spurting freely. Closer examination revealed a similar growth upon the back of the same wrist, one on the side of the neck, and two on the forehead. The growths varied in size slightly but the largest was no bigger than the head of a carpet pin. He had been troubled with violent bleeding from more than one of the

little tumours before but had managed to stop the hæmorrhage himself with firm pressure. The hæmorrhage was easily stopped by destroying the little growth thoroughly with a dental scaler heated to red heat and all the other little tumours visible were similarly destroyed.

The man called again on Feb. 9th, 1907, with blood spurting from a fresh tumour at the junction of the nose and cheek; this was destroyed and also two other fresh ones which had appeared upon the forehead. He was quite healthy and not hæmophilic.

The case is interesting from the rarity of the condition and from the violence of the hæmorrhage, which was far greater than would seem possible from such small tumours.

Caterham Valley.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

On the Condition of the Blood-vessels during Shock.

A MEETING of this society was held on Feb. 12th, Mr. J. WARRINGTON HAWARD, the President, being in the chair.

Mr. J. D. MALCOLM read a paper on the Condition of the Blood-vessels during Shock, which is given in full at p. 497 of our present issue.

Mr. J. P. LOCKHART MUMMERY said that the theory that shock was due to exhaustion of the centres in the medulla and cord controlling the vaso-motor mechanism and that the great fall in blood pressure which occurred was due to the relaxation of the blood vessels throughout the body was founded upon carefully ascertained clinical and experimental facts. Dr. Crile had done a great deal of careful experimental work upon the physiology of shock and our knowledge of that condition was in large measure due to him. Dr. Harvey Cushing, Dr. Mayo, himself, and others had confirmed this work both clinically and experimentally. In the Hunterian lectures for 1905 he brought forward clinical observations in support of Crile's theory and for nearly two years Dr. Symes and he had been carrying out a series of experiments in connexion with the physiology of shock. The theory that shock was due to exhaustion of the vaso-motor centres was no mere hypothesis but a true theory founded upon well-established facts, and if it was to be upset it must be by something more than assertions unbacked by experimental facts. Mr. Malcolm had brought forward no new facts nor any experimental evidence in support of his views. With regard to Mr. Malcolm's contention that the arteries were constricted in shock, he could positively assert the contrary. He had repeatedly examined the arteries of animals suffering from all stages of shock. When shock had commenced, as evidenced by the blood pressure falling, the arteries could be seen to dilate. Vessels which before could not be seen became obvious, and all the small arteries could be seen to relax and become filled with blood. When surgical shock had been fully established all the arteries, arterioles, and veins could be seen to be relaxed fully. This appeared throughout the circulation and with it there was a fall in blood pressure to a fatal level. The capillaries were, however, for the most part empty, as there was not sufficient pressure to maintain the circulation through them, the circulation having almost ceased except in the larger vessels. If while an animal was in a condition of severe shock constriction of the arteries was produced, as it could be by the intravenous injection of adrenalin, the blood pressure rapidly rose and the circulation was temporarily restored. Adrenalin acted directly on the walls of the vessels, as it caused constriction of the vessels and raised the blood pressure, even after the whole central nervous system had been removed. The very condition, therefore, which Mr. Malcolm claimed was the cause of shock was the condition which prevented its occurrence or counteracted it. These facts were entirely opposed to Mr. Malcolm's views and he could not agree with him that his views were in any way compatible with Crile's facts.

Dr. LEONARD L. B. WILLIAMS said that the main fact which Mr. Malcolm had overlooked was that the paralysis of the centre in the medulla controlling the vaso-motor mechanism was partial and not complete. If the paralysis was complete the vessels would be relaxed. He discussed the question how increased blood pressure could produce shock and in illustration he stated that fright could produce shock by the contraction of the vessels, causing sudden death owing to the extreme rise of blood pressure. He did not believe that the treatment of shock by the application of heat was attended by any beneficial result.

Dr. ALEXANDER MORISON said that he preferred to use the term cardio-vascular paralysis or disturbance rather than vaso-motor paralysis, for the effect of shock was on the whole cardio-vascular system and not on any one part. Shock might arise from surgical operation, angina pectoris, or the passage of a calculus, and in the extreme form of shock there was cessation of all cardio-vascular action. In such a condition the heart was found in diastole with the cavities filled with blood and the venous system engorged. In less severe shock the ventricles of the heart were empty, whilst the venous system was engorged. In shock the venous system was replete, though the skin did not necessarily show any turgescence.

Mr. WILLIAM SHEEN said that two opposite views had been expressed as to the condition of the vessels in shock. Mr. Malcolm had said that they were contracted; Mr. Mummery had said that they were dilated. He was of opinion that they were neither dilated nor contracted but were in a state of retraction, and they were in this condition because there was no blood to fill them, the blood being in the internal veins. He looked upon shock as due to afferent nerve impulses reaching the central nervous system giving rise to vaso-motor impulses.

Dr. A. P. BEDDARD said that the primary factor in the production of shock was the fall in the general blood pressure, and provided the heart was working well the only other factor in maintaining the blood pressure was the peripheral resistance. The first effect was dilatation of the visceral vessels and after shock had been present for a short time the arteries were empty because there was not enough blood to fill them. The pallor of the surface was due to the fact that there was not enough blood to fill the vessels; the emptiness of the vessels was not primary but was secondary to the lower blood pressure. With regard to the application of heat in the relief of shock he considered it fundamental as a method of treatment. Shock could not be regarded merely as a vascular phenomenon but was due to various factors in which the nervous system played an important part.

Mr. MALCOLM, in reply, said that with reference to the difficulty of infusing saline fluid into the veins during shock Mr. Mummery declared that this could be done quite easily. The statement in the paper was based on Dr. Crile's assertion that infusion became increasingly difficult as the state of shock deepened.[1] It was shown that if the Riva-Rocci instrument was used a rise of blood pressure in the radial artery must be recorded as a consequence of the administration of alcohol to a patient in a state of shock if improvement followed. The conditions of the peritoneum described by Mr. Mummery were declared to be quite different from those found during operations on human beings if no peritonitis existed. Prolonged peritoneal exposure, of course, induced inflammatory changes, just as persistent exposure of the conjunctiva induced conjunctivitis, but the vascular changes brought about by these inflammatory phenomena had no bearing on the condition of the vessels caused by shock. Mr. Malcolm claimed that his view was based on the physiological fact that stimulation of a sensory nerve caused contraction of the arteries; whereas Dr. Crile's theory was founded on the deduction that a fall of blood pressure must be due to a vascular relaxation—a deduction opposed to physiological teaching, although holding good under strictly limited conditions.

ULSTER MEDICAL SOCIETY.

Cerebro-spinal Meningitis in Belfast.

A MEETING of this society was held on Feb. 7th, Dr. D. GAUSSEN, the President, being in the chair.

Professor W. ST. C. SYMMERS, in opening a discussion on Cerebro-spinal Meningitis, described in detail the post-mortem appearances in five cases. The brain in one case (fulminating) was very hyperæmic, having the vessels greatly engorged with blood, but otherwise not altered. Suppurative meningitis was marked in the other cases,

[1] Blood Pressure in Surgery, by Dr. G. W. Crile, p. 269.

implicating the vertex, sides, and particularly the base of the organ and extending along the spinal cord. The condition of the abdominal and thoracic organs was particularly referred to. In two cases there was suppurative pericarditis and in the other three there were marked hyperæmia of the pericardial capillaries, petechiæ over the surface of the heart, and a slight effusion of clear serum. The lungs in four of the cases showed pleural petechiæ, marked engorgement of the lower lobes, and patches of semi-consolidation, and abundant globules of pus could be expressed from the smaller bronchi. The mesenteric glands were in all cases enlarged and hyperæmic. The solitary follicles were enlarged, appearing as innumerable pin-head projections, often bright red. In short, a condition of psorenteritis, resembling that of Asiatic cholera, was present. The stomach in one case was dotted with petechiæ; the mucous membrane was red and velvety, with streaks and lines of hæmorrhage along the rugæ. The urinary bladder showed numerous petechiæ on the mucous coat and dilated congested capillaries. The kidneys were congested and in two cases showed incipient pyelitis, with puriform matter in the pelvis. The liver showed broad patches of pale yellow scattered over the surface as if from commencing fatty changes. Especial attention was drawn to the enlarged mesenteric glands, inasmuch as from one case an organism was cultivated which was in all probability the meningococcus. This organism on agar plates was identical in appearance with Weichselbaum's coccus and microscopically was a Gram-negative, gonococcus-like body. It could not be cultivated beyond the first generation, a point which still further associated it with the meningococcus. Professor Symmers concluded with a succinct account of the meningococcus, its morphological, cultural, tinctorial, and pathogenic properties, and referred to Vansteenberghe and Gupey's recent work as to the relation of the coccus to Gram's method of staining, quoting also the authority of Radman and Schroter.

Dr. A. GARDNER ROBB gave a description of the cases of cerebro-spinal fever which had been under his care in Purdysburn Fever Hospital, Belfast, during the present outbreak. He said: "It is with considerable diffidence that I place before you to-day some of the more striking points observed in the cases of cerebro-spinal meningitis which have so far been sent into Purdysburn Fever Hospital, as owing to the short time they have been under observation (some of them only just admitted) I feel that any account of them must be very unfinished. I shall therefore only attempt to give you a rough impression of the main features observed so far, and perhaps you will allow me later to give you a more complete account of them. Since Dec. 29th 37 cases have been received into hospital and of these 16 have terminated fatally. On Dec. 29th three children of one family were admitted with acute well-marked symptoms, another member of the same family came in on the following day, and still another two days later, making five from this family, aged 16 months to 15 years, the onset in the first attacked dating from the 25th and in the last from the 29th. Two of these quickly ended fatally (in one a few hours after admission); the other three have recovered. The symptoms left no room for doubt of the diagnosis, but this was confirmed by lumbar puncture in three of the cases and the obtaining of the diplococcus intracellularis and by post-mortem examination of the two fatal cases. No further cases were admitted until Jan. 24th, when three children of one family were admitted with the history of only a few hours' illness, two other children of this same family having been taken ill at the same time but having died at home that morning. Two of the three admitted to hospital also died, one in seven and one in 11 hours after admission; the other showed only mild symptoms and quickly recovered. A sixth child of this family was admitted ten days later and died soon after admission. Thus in this family five out of the six children at home were taken ill within some ten hours, and within 30 hours from the first attack four died, the fifth then attacked recovered; and ten days later the remaining child of the family was attacked, sent at once to hospital, and died on the third day of illness. Lumbar puncture was performed in three of the four admitted to hospital and Weichselbaum's diplococcus was obtained in all. Professor Symmers has just described to you the characteristic signs found post mortem in the two members of the family who died at home. In two other instances we have had two cases in one family. In all other instances only one member of a family has, so far, been attacked. The cases have been admitted from all over the city and it has not been possible to find any connecting link between them. It has been usual to describe four varieties of type in the disease: (1) ordinary; (2) acute fulminant; (3) abortive; and (4) chronic. I think a fifth or *mild* class should be added. Of these mild cases we have had two well-marked examples, one in one of the children, a boy, aged 15 years, from the first family admitted. In his case there was a history of vomiting and slight headache. On admission he had a temperature of 99·6° F., slightly dilated pupils, exaggerated knee-jerk, and general enlargement of the glands, which were very hard and shotty. He showed no further development of the symptoms and might easily have been overlooked had not attention been drawn to the other cases in his family. He has been discharged from hospital. The other mild case was a boy, aged nine years, a member of the family in which the other five attacked died. In his case there were only noted slow, delayed pulse, dilated pupil, slight blueness of the skin, and very slight rigidity of the neck which very quickly passed off. There was complete absence of knee-jerk, which continues now after two weeks in hospital. He showed no other signs. We have had one well-marked instance of *abortive* attack. A boy, aged 14 years, went to bed well at 10 P.M; he awoke an hour later screaming with headache, quickly became delirious, and vomited. He was admitted four hours later completely unconscious, with rigid neck, well-marked Kernig's sign, and a temperature of 103°. He remained in this condition for 24 hours, when his temperature quickly fell to normal and remained so, and he became conscious with some delirium for a few hours; this soon passed off, and he was quite convalescent in 48 hours from the onset, though Kernig's sign was obtainable for some three or four days. In all our cases the onset has been very sudden, in some terribly so. Headache, nearly always extremely severe, has been constantly recorded, with fever and early vomiting in all but one or two, quickly followed by rigidity of the neck, with later retraction of the head and in almost all early delirium, often maniacal. Kernig's sign has been very marked in all except the two mild cases described and in a few admitted so late that they were comatose and the rigidity had passed off. Convulsions at the onset were only noted once, and in this case, which ended fatally, the child had frequently had convulsions at other times. Cyanosis with a bluish tinge of skin has been practically constantly observed even in the mild cases. The temperature has in all the cases received early been considerably raised and has been very irregular, varying rapidly, perhaps on admission 102° and a few hours later 99° and again in a few hours 103°, following no definite course, in the fulminant type remaining rather more uniformly raised, and rising generally before death to 104° or 105°. The pulse has been in the severe fulminant cases generally irregular, delayed, and slow, in some 60 with a temperature of 104°, this peculiar slow rate having been present in many of the most quickly fatal cases. In the less severe cases the pulse has been generally more rapid, 100 to 140 or more, and, like the temperature, very varying in rate, now 140 and a few hours later perhaps 90, for no apparent reason. Pericardial friction has only been observed in one case, although purulent pericarditis has been found in several post mortem. The pupils have been dilated in all the severer cases, equal and reacting readily to light; in only one case have unequal pupils been observed early. Squint has so far only been present in two cases and in only one has it been marked. Nystagmus has been twice seen, in one case very marked. Purulent discharge from the conjunctival sac has been observed in several. Severe conjunctivitis has only been present in one case and the patient had recently suffered from conjunctivitis. Cloudiness of the cornea with pus in the anterior chamber is present in one case under treatment. Spasmodic contraction of the upper lid leaving the eyeball uncovered was present in two cases late in the disease. Abscess of the parotid with purulent discharge from the ear was present in one case; the abscess was incised and the diplococcus intracellularis was found in the pus by Dr. Wilson of Queen's College, Belfast. Deafness has not as yet been noted in any of our cases. Nasal discharge has only been observed in two cases. This is important, as in some other outbreaks discharge from the nostrils was frequently present and has been suggested as a possible channel of infection. Bacteriological examination of the discharge in these two cases gave negative results. Enlargement of the glands in the neck, the axilla, and the groins has been observed in the majority of cases, the enlargement being slight and uniform,

with hard shotty feel. Retention of urine requiring catheterisation has been present in several and in many slight albuminuria. One case was admitted a week ago, then ill seven days, in a state of tetany, which continues; with the hands placed behind his head he can be raised on his heels to the upright position, without pain if done slowly. He is quite clear mentally. He has well-marked grin, rigid lower jaw, and swallows with difficulty. In this case there has been steady improvement under large doses of chloral with bromide of potassium. Herpes has been well marked in five cases, being seen early in extensive patches on the lips, the forehead, under the chin, and in one case on the chest. In a few others herpes has been seen in small patches later in the disease. Erythema has been present in many, urticaria also in several, wheals being easily produced on slight irritation of the skin. Tache cérébrale has been present in some, but not a marked feature. Petechial rash generally associated with the disease and giving to it the name of spotted fever has only been found well marked in two cases; in several there were a few petechial spots found on careful examination, but in more than half the cases no such spots could be found. In the cases we have seen this rash has not been sufficient to warrant much attention being paid to its value as a diagnostic sign. Patches of ecchymosis over the trunk and limbs were observed in two cases which ended fatally. The spleen was palpable in very few and in these pneumonia had occurred as a complication. Arthritis has not been observed so far, nor has bedsore occurred as yet. Needless to say, with the mortality we have had attempts at treatment have been very unsatisfactory. I am not satisfied that I have seen any good results follow either blisters or ice to the spine, though extensively tried. Free use of mercurial inunctions has given no better results. Iodide of potassium, though pushed to the extent of producing rash, has been no better. Opium, especially in the younger subjects in the form of Dover's powder, has given some relief to the symptoms. Chloral in large doses, I believe, has afforded relief to some and is well borne. Warm baths in the cases of young children who can be easily handled without setting up increased pain give considerable and valuable temporary relief. Lumbar puncture as a therapeutic measure is, I believe, of very doubtful value—in only the worst cases can any considerable quantity of fluid be drawn off. I have not seen any relief of symptoms follow in any of the cases in which we have tried it. The puncture should be made in the second interspace, as the fluid is much more difficult to obtain lower down. We expect to receive a supply of Kolle's anti-meningococcus serum to-morrow and although we do not look forward with very sanguine hopes to its effect we will welcome any additional therapeutic agent. Looking at the outbreak as a whole one is at once struck with the fact that it is much more closely related in general clinical features to epidemic pneumonia than to any other form of disease commonly classified as infectious."

A communication having been read from Sir W. WHITLA (who was unable to be present), Professor J. A. LINDSAY, Dr. W. CALWELL, Dr. J. MCCAW, and Dr. C. E. SHAW joined in the discussion.

ROYAL ACADEMY OF MEDICINE IN IRELAND.—A meeting of the Section of Anatomy and Physiology was held on Jan. 25th, Dr. A. F. Dixon, the President, being in the chair.—Mr. F. O'B. Ellison presented a note on the Musculature of the Villi. He pointed out that the villi of the dog were club-shaped, not pointed or cylindrical, as was generally described and as was the case in the cat. This club-shaped extremity contained a large quantity of smooth muscle which was not connected with the muscularis mucosæ. The latter consisted of three layers—namely, the outer longitudinal, the middle circular, and the inner longitudinal. The fibres derived from the muscularis mucosæ in the cat passed round the glands of Lieberkühn and formed a sort of sphincter for the latter. A number of microscopic sections of villi were shown in illustration of the points indicated and one of the specimens showed compound villi.—Professor W. H. Thompson said that the appearance of round spaces with transverse sections of muscle in the first section shown would come to some of them as a revelation of the amount of muscle that could be present in villi. When the specimen was first shown he thought that these were engorged capillaries filled with blood but careful examination proved that they were muscle fibres.—Mr. William Caldwell read a paper on the Estimation of Urea and Hydroxybutyric Acid in Urine. He then communicated a series of notes detailing the process by which he had succeeded in producing, through the interaction of triethylphosphine with monochloracetal and monochloraldehyde, a new chemical compound—triethylphosphine-chloraldehyde or "phosphorus-muscarine." Triethylphosphine combined with monochloracetal to give triethylphosphine-monochloracetal, which on treatment with concentrated hydrochloric acid yielded triethylphosphine-chloraldehyde.—The President exhibited a series of sections and x-ray photographs of the Upper End of the Femur to illustrate the arrangement of the cancellous lamellæ and of the structure known as the calcar femorale. The calcar femorale was shown to represent the posterior aspect of the bent upper end of the tubular femur. The bent portion of the tubular bone became oval in transverse section. In the young bone, what was afterwards the calcar formed the posterior surface of the neck, but with the development of the trochanters and the projections for muscular attachments this part of the surface was covered over and came to lie deeply. The spirally arranged supporting lamellæ, formerly described by Dr. W. S. Haughton and the President, were attached in right- and left-handed spirals to the deep aspect of these sunken parts of the surface of the neck of the bone, in precisely the same manner as to the other parts of the inner aspect of the hollow shaft and neck.—Professor E. P. McLoughlin said that the communication threw quite a new light on the significance of the calcar, and the sections showed this structure to be very much more extensive than had been generally described.—Professor Alexander Fraser exhibited two adult Male Subjects Cut in the Long Median Plane. One had been cut four or five weeks previously, and the other, an ordinary injected dissecting-room subject (not specially prepared), had been cut the day before the meeting. The latter had the largest stomach that he had ever seen. It was equably dilated from cardiac to pyloric orifice. It had distended the right and left aspects of the body wall and appreciably diminished the size of both liver and spleen. He referred also to the varying relations of the ventral aorta to the sternum and to the presence of the embryonic cranial flexure in the adult, which did not cease with the bony dorsum sellæ, but extended as soft supporting tissue to the roof of the fossa interpeduncularis, a point which had great significance in the numerous measurements of the skull. He also drew attention to the variations in the distance between the perineal skin covering and the posterior extension of the body cavity in both male and female, and more particularly in the young. These sections were very instructive and were much appreciated by students in the ordinary dissecting-room teaching.—A meeting of the Section of Obstetrics was held on Feb. 1st, Dr. R. D. Purefoy, the President, being in the chair.—Dr. Henry Jellett exhibited apparatus for sterilising ureteral or other forms of gum-elastic catheters by means of formalin vapour. The exhibit consisted of two instruments—one of which had been brought from Germany by Dr. K. E. L. G. Gunn, who thought that it had been originally devised by a Japanese; the other Dr. Jellett had made for himself from particulars given by Dr. Gunn. Sterilisation was effected by the constant passage of coal gas impregnated with formalin vapour through the catheter, which gas was subsequently burnt off in the Bunsen burner that supplied the necessary heat for generating the formalin. A series of experiments undertaken by Dr. Robert J. Rowlette proved that this method of sterilisation was very thorough and satisfactory.—Mr. E. Hastings Tweedy said that when the disinfecting properties of formalin were first discussed opinion was strongly against it when vapourised from the solid. If the dry formalin had no sterilising power it must be the coal gas in the apparatus exhibited which acted as the disinfectant.—Dr. T. P. C. Kirkpatrick said that in experiments on the subject of room-disinfection formalin was found to have slight penetrating power. Bacteria could be killed close to the opening of culture tubes but quite a short way down the disinfection ceased abruptly at a definite line. It was not likely, therefore, to penetrate effectively into the catheters for any considerable distance.—Dr. Jellett, in reply, said that he was not disposed to take the view that formalin in the dry state would not cause sterilisation. The larger apparatus would take in a cystoscope, but he had not tried it on metallic instruments. The same objection would, however, stand in regard to them as to the use of the apparatus in disinfecting dressings and sponges—namely, that there would be a certain amount of deposit of formalin

left on them which would leave sponges and the like in a too irritating state. This objection did not apply to catheters as they could be washed in sterilised water and the formalin thus removed.—Dr. Jellett also read a paper entitled "A Contribution to the Technique of Operations on the Appendages." After discussing various points connected with the performance of salpingectomy, oöphorectomy, and salpingo-oöphorectomy, as well as plastic operations on the ovaries and tubes, he suggested that the following principles might be laid down. 1. The broad ligament ought never to be tied with interlocking sutures or with a Staffordshire knot. The objections to both methods were, first, that they pulled the top of the ligament together and so shortened it, and the contracted ligament in turn tended to drag the uterus backwards; and secondly, that they necessitated the use of silk, as it was difficult or impossible to include so great a mass tightly in a catgut ligature. 2. Silk ought never to be used in the presence of inflammation, as it tended to become a permanent depository of infection. 3. The surgeon ought never to remove more of the appendages than was necessary, because the retention of even a portion of the ovary added greatly to the future comfort of the patient, and if to this was added even the stump of a pervious Fallopian tube there was present at any rate the possibility of a future pregnancy instead of the certainty of sterility. 4. The operation ought always to be concluded by performing ventro-suspension of the uterus, otherwise the uterus was almost certain to fall back and contract fresh adhesions, thus often causing the persistence of pain.—Sir A. V. Macan said that the possibility of a woman having children in the future had an enormous effect in obviating depression of the mind, and the retention of a sufficiency of ovarian tissue to enable menstruation to continue could not be too highly praised. The feeling abroad in connexion with the danger of silk as a focus of infection was that it was impossible to prevent it; hence catgut was favoured for everything except the abdominal wall and intestines.—Mr. Hastings Tweedy said that the Staffordshire knot had been used successfully for many years and he considered it a quicker method of tying off the broad ligament than any of the methods suggested and it was less liable to cause subsequent adhesions. There was not, he thought, any second opinion in regard to the use of silk in an infected case; the burying of it in the midst of septic matter must end in disaster. But it had enormous advantages in other cases. If fine silk was used and was boiled in corrosive sublimate it was capable of resisting germs for five or six days, and he had absolute proof that silk was absorbed. In regard to the question of drainage, its value lay in the causing of irritation and the exudation of serum that might possibly wash out some of the germs and do good, but drainage after 24 hours was seldom of any use.—The President said that he was in favour of preserving as much of the organs as possible where there was the least possibility of function continuing afterwards. He had been accustomed to tying the broad ligaments *en masse*, and although Dr. Jellett's method might be more artistic he was not sure that it had any great advantage over the other. He had no doubt that silk was absorbable.

MANCHESTER MEDICAL SOCIETY.—A meeting of this society was held on Feb. 6th, Dr. S. Moritz, the President, being in the chair.—Dr. H. Ashby showed nine specimens illustrating Congenital Pyloric Stenosis in Infants. The ages of the infants at death varied from 32 days to four months. The times at which the vomiting commenced varied from seven days to 20 days. They all showed hypertrophy of the circular fibres of the pyloric sphincter, hypertrophy of the walls of the stomach, dilatation, and marked gastric catarrh. They were treated during life with stomach washing, with either whey or peptonised milk and small doses of tincture of opium. In only one case was operation performed (by Mr. E. D. Telford), a posterior gastro-enterostomy; death occurred in 12 days. A septic abscess had formed between the spleen and the stomach and there was also a septic pneumonia. Death occurred suddenly and unexpectedly in two cases which were apparently doing well.—Mr. W. Thorburn communicated two cases of Acute Infective Bone Disease unassociated with necrosis. The first, which was an example of serous or albuminous periostitis involving the whole of a metacarpal bone and appearing as a sequel to active suppurative osteomyelitis of the femur, was brought forward as an example of attenuation. The second was a case of acute suppurative periostitis of the femur in a boy, aged 11 years, in which the periosteum was stripped off almost the whole of the shaft by a large collection of pus. The shaft remained bare and exposed at the bottom of the large incision made for drainage for a period of many weeks, but eventually the wound healed without the formation of any sequestrum. In the latter case convalescence was complicated by the development of suppurative epiphysitis at the lower end of each tibia, small abscesses being there formed and small sequestra being produced. It was suggested that the original infection of the femur was probably an example of true periostitis in which there had been no interference with the intra-osseous blood-supply, whereas in the subsequent and less active foci inflammation had commenced in the usual position (the ossifying plane) and had thus more seriously affected the bone.—Mr. E. Stanmore Bishop read a paper on Vesical Calculus and the Methods in Use for its Removal. He remarked that although litholapaxy had many advantages the choice of this method must always depend upon the absolute certainty or otherwise of total removal of all fragments, however small. It was no wonder, therefore, that surgeons were once more reverting in some cases to cutting operations. Of these, he professed a preference for the perineal route if septic cystitis were present, otherwise for the suprapubic operation. For purposes of diagnosis he claimed that the time had arrived for total abandonment of the sound. Skiagraphy was extremely useful, but the cystoscope had two great advantages over even this method. Stones impacted in the vesical end of the ureter or imbedded in a diverticulum would be shown by a skiagram but not their relation to the vesical cavity. Besides this small growths at or near the internal urethral opening might give rise to symptoms which could only be satisfactorily differentiated from those of calculus by the aid of sight. In describing the technique of suprapubic cystotomy he showed certain forceps for securing the edges of the divided bladder which gripped without crushing them; others for the removal of the stone the blades of which protected the raw surfaces through which the calculus had to be withdrawn; Cathcart's instrument by which the vesical interior might be more clearly examined; and a bougie with bulbous tip for lifting up the anterior wall previously to its division. He claimed strongly in favour of immediate suture of the bladder in all clean cases as avoiding the well-known drawbacks of the old suprapubic operation—the dribbling of urine over the skin, possible secondary abscesses behind the pubic bone, urinary fistulæ, the avoidance of an open wound, especially in children, and similar sources of disgust and disappointment. He pointed out that it was not now so necessary to insist upon asepsis, since that might be taken as a matter of course, but that the obstacles to the primary union of such a wound would now be found to be (1) the escape of fluid from the bladder over the wound when that viscus had been distended with boric solution before division; (2) the opening up of the cavum Retzii and the formation there of a hæmatoma; and (3) the bruising of the edges of the wound either in the bladder or the tissues of the abdominal wall. He showed several stones, ureteric and vesical, and a patient with the temperature chart to demonstrate the small amount of local or constitutional disturbance produced.

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH.—A meeting of this society was held on Feb. 8th, Dr. D. S. Davies, the President, being in the chair.—Mr. H. O. Pilkington, medical officer of health of Preston, opened a discussion upon the Reduction of Infantile Mortality without Municipal Milk Depôts. He said that in the industrial towns of the north one of the principal causes of infantile mortality was the continuing at work of pregnant women, and that as long as the wife could earn more money than her husband this was likely to continue. Insanitary surroundings and noticeably those caused by the occupiers were also important factors. Good houses which were well cared for by the owners often degenerated into little better than pig-styes and especially if tenanted by the intemperate. Although there was undoubtedly less drunkenness among the upper and middle classes the same could not be said of the working classes. Ignorance of the first principles of health and adherence to tradition were fruitful causes of early death in children. Mr. Pilkington considered that the insurance of children was not a direct cause of infantile mortality. Far more children were killed by mistaken kindness than wilfully. There should, however, be no inducement held out to parents to make a profit out of the death of a child. The appointment of women health

visitors under the direct supervision of the medical officer of health afforded a means of giving advice to mothers in the rearing of children. Their duties should, however, be quite distinct from those of the sanitary inspector. Their work would be reduced in value, if not altogether destroyed, if they served formal notices or took punitive measures. Help should be given by these visitors as soon as possible after the birth of a child. In connexion with infantile diarrhœa, the health visitor could do an enormous amount of good by condemning the tube feeding-bottle and urging the necessity for keeping covered the supply of milk. To insure that every child not breast-fed should have a supply of clean unadulterated milk would be a long step towards lowering the death-rate from infantile diarrhœa. There were in Preston three women health visitors, and in the three quinquennial periods ending 1906 the infantile mortality rates were 231, 239, and 176 per 1000 births.—Dr. Sidney Davies said that a municipal milk depôt had been established in Woolwich only three months. He considered it quite a subsidiary means of reducing infantile mortality.—Dr. J. F. J. Sykes considered that the main cause of infantile deaths was hand-feeding, and he was of opinion that health visitors should teach maternal duties rather than domestic household hygiene. He agreed that the difficulties to be dealt with were enormously increased in those towns where women and girls could earn double the wages of men. Although it was a difficult matter to prove definitely whether breast-feeding had increased, the health visitors in St. Pancras from their observation were of opinion that it had increased of late years.—Dr. H. Meredith Richards referred to the advantages to be gained from the compulsory notification of diarrhœa and from the establishment of infantile dispensaries.—Dr. W. Butler said that as the result of inquiries he had made he found that insurance had no influence on the mortality of infants. He pointed out that the eldest children survived diseases such as measles and whooping-cough because they were not exposed to school infection, whereas the later children were infected by their elder brothers and sisters.—The President said that the infantile death-rate in Bristol was so low—116 per 1000 births—that it was difficult to convince the sanitary authority that it could be still further reduced.

FORFARSHIRE MEDICAL ASSOCIATION.—A meeting of this society was held in Dundee on Jan. 17th, Mr. David M. Greig, Vice-President, being in the chair.—Dr. J. Mackie Whyte showed a woman, aged 49 years, who two years ago had a Sarcoma removed from the Scalp, but it had now returned and had grown to an enormous size and there were indications of secondary affection of the lungs.—Dr. J. S. Y. Rogers showed a case of Keratosis Pilaris in a young girl.—Dr. Whyte read notes upon four cases of Beriberi, which had been under treatment in the Dundee Royal Infirmary. The patients were Chinamen and from their inability to speak English only a very meagre history of their illness could be obtained. They had probably been ill for three weeks before admission and all exhibited similar symptoms—namely, those of an acute peripheral neuritis with considerable circulatory disturbances, and great general weakness. The symptoms included paresis in the arms and legs, loss of knee-jerks, œdema round the ankles, tenderness in the muscles of the calf, and wasting of muscles, expecially those in front of the tibia. The sensory system appeared to be unaffected. There were palpitation and breathlessness and the heart was dilated, showing pulsation in the epigastrium and in the neck. There were no gastric or intestinal disturbances. The patients all recovered with rest and appropriate diet.—Mr. Greig read a paper on the Clinical Aspects of Lympho-sarcoma in Children, based on a series of seven cases, all of which had been confirmed by pathological examination. He first dwelt on the imperfect descriptions given in surgical text-books and ascribed this and the existing confusion between lympho-sarcoma and lymphadenoma to the rarity of the disease. In all the seven patients the glands in the neck were the first to be visibly affected, though from the subsequent course it was apparent that the disease had probably begun in the mediastinum. All had died except one who had been comparatively recently operated upon.——A meeting of the society was held on Feb. 7th, Dr. Whyte being in the chair.—Dr. A. Don showed a case of Favus which had been treated by the x rays and an ointment of oleate of copper. The x rays had been used to cause falling out of the hair, a full dose being given to each part. The final result was satisfactory, the hair having grown over the entire scalp and the disease remained cured at the end of three months.—Dr. R. C. Buist read notes on Obstetric Albuminuria and Eclampsia, dealing with 67 cases of albuminuria and 33 of eclampsia which had occurred in Dundee Royal Infirmary. He said that albuminuria was more than twice as frequent in first as in subsequent pregnancies, and that eclampsia was about ten times as frequent in first as in subsequent pregnancies. The cases showed a seasonal distribution with a very distinct maximum in winter and minimum in summer. Seven women died from eclampsia. In the treatment of the eclampsia dilatation of the cervix was practised 15 times, of which six were by Bossi's method, forceps were applied 17 times, and three were perforated. The medical treatment consisted mainly in the use of hot packs and baths, morphine in full doses, and saline suffusions; veratrum had not given sufficiently good results to warrant its continuance.—Dr. Don read a paper on Excision of Cancer of the Breast.—Dr. W. E. Foggie read notes of a case of Subcutaneous Emphysema complicating an attack of whooping-cough in a delicate child, aged six months. It occurred in the third week and lasted three weeks in all. The neck, face, and scalp were involved. The condition was recognised as a definite, but infrequent, complication of whooping-cough and of some other chest affections.

HUNTERIAN SOCIETY.—A meeting of this society was held on Feb. 13th, the President, Mr. John Poland, being in the chair.—Dr. W. Langdon Brown read a paper on Acetonuria, its Clinical Significance and Treatment. He said that the presence of diacetic acid in the urine was more important than that of acetone, but diacetic acid was unstable and broke down into acetone if not excreted very rapidly. It was found not only in diabetes but also in other conditions—e.g., recurrent vomiting in children, pernicious vomiting of pregnancy, mountain sickness, delayed chloroform poisoning, and starvation. Acetonuria was a symptom of tissue degradation, of acidosis with insufficiency of oxygen. It was possible that biliousness and migraine were both due to acetonuria. The most successful treatment consisted in the administration of large doses of sodium bicarbonate. Dr. Langdon Brown dwelt at some length on the question of delayed chloroform poisoning.—Dr. Lewis A. Smith insisted on the importance of acetonuria in the differential diagnosis between diabetes and alimentary glycosuria. He demonstrated the fact that the urine of a patient who was taking salicylates gave a reaction with a solution of perchloride of iron similar to that given by urine containing diacetic acid. He spoke of the marked changes seen in the epithelium of the renal tubules in some fatal cases of diabetes.—Dr. H. Russell Andrews remarked on the fact that acetone was found sometimes in the urine after labour, particularly in cases where the labour had been difficult and prolonged, and asked whether it was possible that prolonged administration of chloroform was responsible. The theory that acetonuria could be looked on as a sign of intra-uterine death of the fœtus had been disproved. In some cases of necrobiosis of uterine fibroids acetone was found in the urine.—Mr. F. R. Humphreys exhibited charts which he had compiled from the monograph of Dr. Schumann Leclercq on the variations brought about by dieting in the amount of acetone in his own urine.—Dr. Theodore Fisher spoke of recurrent vomiting in children, which seemed to be due sometimes to a recurrent febrile affection. He doubted whether the fatty condition of the liver found after chloroform poisoning was due so much to the administration of cod-liver oil as to prolonged sepsis.—Dr. R. Fortescue Fox asked whether acetonuria occurred after administration of anæsthetics other than chloroform.

EDINBURGH OBSTETRICAL SOCIETY.—A meeting of this society was held on Feb. 13th, Dr. J. W. Ballantyne, the President, being in the chair.—Dr. F. W. N. Haultain read a paper on a Clinical and Anatomical Study of 30 Cervical Fibroids removed by Abdominal Hysterectomy. Out of 260 cases of hysterectomy for uterine fibromyomata 30 were tumours primarily of the cervix. At the operation these tumours were not so formidable to remove as their situation would lead one to expect, as they were usually readily enucleated from their surroundings. The difficulties were the displacement of the usual landmarks, the close relation of the ureters, and the inability to recognise the

elongated and stretched uterine arteries. It was preferable to commence the incision in the vaginal wall anteriorly after stripping the bladder down; this latter part was easily done, though care should be taken not to tear through the large plexus of vesical veins. When the growth was from the posterior wall the loose peritoneum was incised and the tumour enucleated from the rectum and its bed, care being taken to keep close to the tumour laterally to avoid the ureters. The rest of the procedure was the same as if it grew anteriorly. After the tumour was removed and all bleeding vessels were tied the bed was packed with gauze and the end was drawn into the vagina. The two layers of the peritoneum were stitched over the gauze with continuous thin sutures in Lembert fashion. The gauze was withdrawn in two days and the vagina was syringed daily with warm sterilised water. In posterior growths the close connexions of the tumour to the bowel formed a distinct source of danger, as the bed of the tumour was likely to become infected with the bacillus coli. In three of his cases this occurred and two proved fatal. The bowel should therefore not only be freely evacuated but irrigated by a weak antiseptic solution. Three deaths occurred in these 30 cases, a mortality of 10 per cent., which compared unfavourably with the mortality in his series of hysterectomies for corporeal fibroids, which was less than 1 per cent. But the operation was legitimate, as the symptoms present in all these cases were severe and dangerous.—Dr. D. Robertson Dobie (Crieff) read a paper on a Method of Delivery by Forceps in some Difficult Occipito-Posterior Cases. He advocated the application of the blades of the forceps over the parietal eminences but with the pelvic curve reversed, with it facing the sacrum instead of anteriorly; traction was then made with the handles brought well forward towards the abdomen. By this means he stated that flexion was promoted and he gave illustrative cases of easy delivery.—Dr. A. H. Freeland Barbour, Dr. W. Fordyce, Dr. J. L. Lackie, and the President discussed the paper.—Dr. Freeland Barbour read notes on two cases of Hysterectomy in Pregnancy for Uterine Fibroid. The patients were considered to be between four and five months pregnant. In both cases the operation was found to be easier with the presence of pregnancy than without, as, though more ligatures were necessary to control venous hæmorrhage, yet the stretching of the peritoneum and opening out of the ligaments facilitated the dealing with bleeding points and the covering over of the pelvic floor with peritoneum. Both patients made an excellent recovery.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held at Liverpool on Feb. 15th, Dr. E. O. Croft (Leeds), the President, being in the chair.—Dr. Henry Briggs and Dr. Edward Emrys-Roberts exhibited the Fallopian Tubes and Ovaries from a case of Acute Gonorrhœal Salpingitis occurring in a woman, aged 25 years, who had suffered from repeated attacks of pelvic pain since marriage five years ago.—Dr. John E. Gemmell showed a Double Pyosalpinx. The tubes were each four inches long and one inch in diameter. There were only a few peritoneal adhesions. The ovaries were unaffected.—Dr. F. W. Baker Young (Liverpool) showed a Safety-pin removed from the vagina of a girl, aged eight years. It had been there for two years and had caused continuous hæmorrhage.—Dr. Archibald Donald (Manchester) described a case of Ectopic Pregnancy coexisting with Uterine Pregnancy in a quartipara, aged 40 years. Previously to this pregnancy menstruation had been regular every four weeks, lasting from one to 14 days. She was delivered of a seven-months living child eight weeks prior to admission to hospital. Three days after the confinement her medical attendant noticed an abdominal swelling which increased in size and was accompanied by intermittent cutting pain in the left side. During the eight weeks following delivery there were two menstrual periods lasting seven and 14 days respectively, the latter accompanied by the passage of two large stringy lumps. There were no symptoms of severe pain, fainting, or other signs of hæmorrhage. An irregular swelling occupied the hypogastric and both iliac regions, and on examination per vaginam was found to be distinct from the uterus. Abdominal section revealed a sac composed of the left Fallopian tube, containing a decomposing fœtus measuring 13 inches and weighing nearly three pounds. The sac was adherent to the intestine and was therefore stitched to the edges of the abdominal wound and packed with gauze. The patient was discharged convalescent at the end of six weeks. The extra-uterine was probably synchronous with the uterine pregnancy, death of the fœtus occurring when the uterine fœtus was born.—Dr. Gemmell and Dr. H. Leith Murray showed a Tumour of the Right Ovarian Ligament weighing two pounds and of the size and shape of a cocoa-nut. There was a double twist of the pedicle and the surface and substance of the tumour were deeply mottled with hæmorrhage. Microscopic section proved it to be a pure fibroma.—Dr. A. Stockes (Liverpool) described a case of Fatal Vomiting in a secundipara who was seven months pregnant. From the second to the sixth month the vomiting was not excessive but for the fortnight preceding admission to hospital it was continuous and "coffee-ground" in character. She was so ill that induction of premature labour was deemed inadvisable. Rectal saline injections were administered. Death occurred on the second day after admission from cardiac failure. At the necropsy partly digested blood was found in the stomach and the small intestine and the kidneys were congested; the other organs were normal.

ÆSCULAPIAN SOCIETY.—A meeting of this society was held on Feb. 15th, Dr. J. R. T. Conner, the President, being in the chair.—Dr. T. Grainger Stewart showed an early case of Pseudo-hypertrophic Muscular Paralysis in a boy, aged eight years, who showed well the characteristic lordosis, the enlargement of the calves, the waddling gait, the absence of the lower parts of the pectoralis major and latissimus dorsi muscles, and the pathognomonic position assumed in getting up from the floor. He also showed a man, aged 21 years, who had suffered from Acromegaly for the past five years. He showed the characteristic enlargement of the hands, feet, jaw, forehead, lips, tongue, and nose, also the kyphosis and thickened skin.—Dr. B. G. Morison exhibited a series of microscopic sections of Epithelioma of the Tongue and of the Lip.—Dr. Leslie Darno showed a Right Kidney containing Three Encysted Calculi, one of the size of a hazel nut and two of the size of peas, which had been removed post mortem from a man whose last attack of renal colic took place six years ago.—Dr. D. Ross showed two cases of Extensive Leg Ulcer which had been rapidly cured by the administration of 15 grains of calcium chloride thrice daily after meals. One patient had been under his care two years ago and under local treatment only the ulcer took six weeks to heal; lately a much larger ulcer completely healed in two and a half weeks when calcium chloride had been exhibited. He also showed two cases of Angio-Neurotic Œdema occurring in a mother and her child. The mother had occasional local œdematous swellings of the hands, feet, face, and eyelids, while the child suffered from acute relapsing œdema of the eyelids.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Jan. 15th, Dr. A. Mantle being in the chair.—The following specimens were shown:—Mr. C. F. M. Althorp: Endothelioma of the Tongue originating in the Sublingual Gland.—Dr. F. W. Eurich: (1) Microscopic Demonstration showing some of the Characteristics of Endotheliomata; and (2) Ataxic Paraplegia.—Mr. J. Basil Hall: (1) Prostate removed from a patient, aged 67 years; (2) Prostate removed from a patient, aged 79 years; (3) Large Gall-bladder from a case of Cholecystectomy; and (4) Villous Tumour removed from the Bladder.—Dr. W. E. Heilborn: Specimens from a case of Tumour of the Cerebellum.—Dr. H. J. Macvean: Abscess of the Spleen and Suppurative Hepatitis following Perforation of a Gastric Ulcer.—Dr. T. W. Hime read a paper on Alcohol with special reference to its Nutritional Value and Therapeutic Uses. Dr. Hime wished to enter an emphatic protest against the spreading broadcast of pamphlets denouncing alcohol as a poison, without any reference to the amount used. Nearly every drug they knew of, he said, was a poison if given in sufficient quantities. As a therapeutic agent he regarded alcohol as a most useful drug, and there was in his mind no doubt as to its nutritional value.—The paper was discussed by Dr. R. H. Crowley, Dr. Eurich, and Dr. T. J. Wood.—Dr. Hime replied.

BRITISH GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held on Feb. 14th, Mr. W. D. Spanton, the President, being in the chair.—Dr. S. Jervois Aarons showed specimens of four cases of Membranous Dysmenorrhœa with casts and read notes. Microphotographs were exhibited. Three of the specimens were solid. The ages varied between 15 and 45 years. One patient had four children, while two were single and one was sterile. One

cast was seven centimetres in length. There was no evidence of conception in any of the cases.—Dr. J. H. Dauber showed: 1. A specimen of Fibroma of an Ovary fixed in the Pelvis, causing extrusion of the uterus; this was removed from a patient, aged 77 years, who made a rapid recovery after the operation. 2. Fibromyoma of the Uterus weighing 30 pounds removed from a patient, aged 57 years, who complained for 12 years previously. On operation about a gallon of ascitic fluid escaped. The tumour burrowed into the left broad ligament and was adherent to the transverse colon, bladder, and ascending colon. The operation lasted a little over an hour.—Dr. Macnaughton-Jones showed a specimen of a Uterus containing multiple Myomata removed through an abdominal incision.—The President then delivered an inaugural address, taking as his subject "The Gynæcology of To-day and of Fifty Years Ago."

GLASGOW PATHOLOGICAL AND CLINICAL SOCIETY.—A meeting of this society was held on Feb. 11th, Dr. J. Lindsay Steven, the President, being in the chair.—The following card specimens were shown:—Professor R. Muir: (1) Spinal Cords from cases of Cerebro-spinal Meningitis; and (2) Specimens from a case of Generalised Melanotic Sarcoma (primary tumour in the eye).—Dr. John Anderson: (1) A Kidney the seat of Tumour of the Adrenal Type; and (2) a Brain with Basal Meningitis from a case of pneumonia.—Dr. John H. Teacher: Specimens from two cases of Abscesses in the Liver secondary to Septic Cholangitis.

Reviews and Notices of Books.

Anæsthetics and their Administration. By FREDERIC W. HEWITT, M.V.O., M.D. Cantab. With illustrations. Third edition. London: Macmillan and Co. 1907. Pp. 627. Price 15*s*.

DURING the six years that have elapsed since the last edition of Dr. Hewitt's book much has been done both towards gaining increased knowledge upon the scientific questions involved in the subject of anæsthesia and towards improved practice in the art of administration. It is not surprising, therefore, that the author of this book has found it necessary to increase the size by about a hundred pages, although at the same time he has compressed some of the original matter, thus furnishing practically a new treatise. The book is comprehensive save for the omission, deliberate no doubt, to notice local and spinal anæsthetics, and it has that clearness and orderly arrangement which are only attained by the expenditure of great pains.

The prominence given to ethyl chloride during the last few years comes in, as might be expected, for notice. Our readers may remember two articles by Dr. Hewitt in THE LANCET of Nov. 19th and 26th, 1904, describing clinical experiments with the vapour of this drug and air in various proportions. His opinion of ethyl chloride, as we gather it from those articles and from the book before us, is that its proper field is a limited one and that the present methods for its use are capable of considerable improvement. In one class of case, however, he mentions ethyl chloride as of particular service. Alcoholic subjects undergoing a short operation such as is commonly performed under nitrous oxide are, as is well known, not only very imperfectly susceptible to the anæsthetic effects of nitrous oxide but also spasm and cyanosis arise with ease during its use. Dr. Hewitt says: "In certain exceptional (alcoholic) cases nitrous oxide seems incapable of producing anything more than an analgesic state. It is in such cases as these that ethyl chloride is often of great service." He also prefers it for the induction of anæsthesia in the case of children who are "actually crying or hopelessly recalcitrant when the moment of administration arrives." Allied to the alcoholic cases are those of heavy smokers and here again it is stated that the subjects who "display great insusceptibility to nitrous oxide may generally be successfully anæsthetised by ethyl chloride administered *per se* or in conjunction with nitrous oxide." On the other hand, the very obese are considered by Dr. Hewitt unsuitable subjects for ethyl chloride. With regard to fatalities in connexion with this anæsthetic, the author draws attention to the ease with which unexpected danger may arise at the hands of the inexperienced owing to the rapidity with which anæsthesia is induced and owing to the fact that the state of full narcosis with ethyl chloride is unaccompanied by the pallor or the cyanosis that commonly act as warnings during the use of other anæsthetics. As regards the method of administration, Dr. Hewitt recommends a very simple form of inhaler which is figured and clearly described; it is an apparatus which he has designed primarily for the use of the C.E. mixture. When used for ethyl chloride alone this inhaler does not require the presence of any sponge or lint.

In the part of the book devoted to the physiology of anæsthesia there is a good deal that is new. Dr. Hewitt lays much stress upon the importance of separating phenomena which are, in fact, dependent upon operative procedures while in progress from those which are purely due to the anæsthetic. He has no doubt that in many cases results, particularly those of the nature of shock, are often attributed to a liberal or long administration of the anæsthetic when, in fact, they are mainly the consequence of severe or prolonged surgical measures. On the other hand, the extent to which the anæsthetist can control or cause these effects by correct or incorrect management is also not always recognised. He points out that the experimental physiologist investigating anæsthesia in an animal anæsthetised through the trachea is generally concerned with a simple condition very different from that met with in clinical practice during the performance of an operation under anæsthetics. Dr. Hewitt terms the former case one of *simple* as opposed to the *complex general surgical anæsthesia* of the latter example. He attaches much importance to the local obstructive elements, due to the tongue and the muscles of the jaws and neck, that often come into play in the case of the anæsthetised human being. In fact, in the case of chloroform Dr. Hewitt appears to regard the element of intercurrent asphyxia, which may be, and often is, introduced in this way, as of more vital importance than the question of strength of vapour. While not prepared to go to quite this length we may certainly admit that safety cannot be insured if the perfect patency of the air way does not receive at least as much attention as the vapour which is being inhaled through it.

Dr. Hewitt enters into a careful consideration of the phenomena of surgical shock. He gives this term a wider meaning than is generally accepted and introduces under the name "respiratory shock" symptoms which are not commonly regarded as belonging essentially to "shock" at all. By so doing he is enabled to give a better description of the phenomena, whether of respiration or of circulation or of both these kinds, that may arise in the course of operations upon anæsthetised subjects. The well-known views of Crile upon shock—regarded by him as a phenomenon purely of vaso-motor exhaustion—come in for full recognition under Dr. Hewitt's heading of "circulatory shock," the view being held that when the administration of an anæsthetic has been carried to the point at which pain can no longer be felt the commencement of an operation is probably unattended by any risk of primary fatal reflex syncope. When, however, anæsthesia is profound, and particularly if chloroform is being employed, then a surgical stimulus of certain kinds may produce grave effects upon the circulation. That is to say, in this view severe shock is more likely in very deep than in moderate anæsthesia, though it is also more likely in *incomplete* anæsthesia

than in the latter. This is, of course, opposed to the view that to lessen danger of shock anæsthesia must be deepened, granted, that is to say, that by anæsthesia is meant complete though only moderately deep anæsthesia. In connexion with the question of shock an observation is recorded of which we do not recall previous mention. Dr. Hewitt says that when intercurrent surgical shock takes place during anæsthesia the mucous secretion of the mouth is suspended, reappearing as the shock subsides. This bears an interesting analogy to the familiar parched mouth of fever and sudden intense emotional conditions and shows a direct contrast with the profuse secretion from the sweat glands which is a familiar feature of surgical shock.

When the special physiology of chloroform is discussed we find, as might be expected, much new matter relating to the dosimetric administration of this drug. Good descriptions and illustrations are given of Dubois's well-known apparatus as well as of those designed by Waller and by Collingwood. Dr. Hewitt's views on the value of dosage are clearly stated. He says: "It is very important that the rôle played by the percentage of chloroform in chloroform atmospheres should be clearly understood. Were all chloroform accidents attributable, as many believe them to be, to vapour concentration it would be impossible to over-estimate the value of this factor." He believes, however, that "many of the dangers during chloroformisation may arise during the inhalation of the most perfectly adjusted mixture." He quotes a physiological experiment strikingly corroborative of this contention, which is to be found in the report of the special chloroform committee of the British Medical Association,[1] and also a clinical case that has a very direct bearing on the question. While denying it the position of sole importance Dr. Hewitt does not fail to lay due stress upon the question of vapour strength. He admits, as everyone must, that there are certain percentages which are in themselves safe and others only slightly higher which are in themselves dangerous and that there are consequently certain limits within which safety is confined so far as the avoidance of toxic symptoms is concerned. He states that "most observers agree that mixtures containing more than 3 per cent. of vapour should be avoided." This matter is, of course, one on which difference of opinion exists and many would regard this as an unduly strong vapour for the maintenance of anæsthesia even if they admitted the propriety of its use during induction. When we come to the practical side of this question and have to consider the best method of administering chloroform, the difference of opinion that holds is even wider and is fully appreciated by Dr. Hewitt. He regards the question as being still in an unsettled state by reason of the recent introduction into practice of ingenious instruments, the Vernon-Harcourt inhaler and others, by which Snow's great principle of regulating the percentage composition of chloroform atmospheres may be carried into effect. The advantages and disadvantages of regulating inhalers are fully and fairly stated and, broadly speaking, the conclusion arrived at by the author is that until some still better and more widely applicable inhaler is available the experienced administrator is best off with simple methods, whilst the inexperienced is more likely to avoid danger by using a regulating inhaler.

Some of the most interesting new material incorporated with this edition is that concerned with the after-effects of anæsthetics. Referring to the familiar respiratory complications which are not uncommonly associated with ether inhalation, Dr. Hewitt believes that probably more than one factor plays a part in the production of these results. He does not hold that cutaneous exposure, incautious ventilation, or the conveyance of patients through draughty corridors can have any great share in producing the respiratory after-effects, seeing that the latter are so rare after other anæsthetics than ether. It would seem, according to Dr. Hewitt, that the hypersecretion of mucus, which is almost characteristic of ether anæsthesia, is the chief factor in most cases of ether bronchitis and ether pneumonia. All these cases are not alike and a very probable and hitherto disregarded explanation that applies to not a few is that of pulmonary infarction secondary to thrombi from the seat of operation. This is a sequence of events suggested by Dr. Henry Menzies to explain certain cases with which he met and is here published, we believe, for the first time.

Not the least interesting part of Dr. Hewitt's work is the preface. In this he states in very telling language opinions, which he holds strongly, upon the importance of the proper teaching and proper recognition of anæsthetics as a special branch of the medical art. His views on the point are thoroughly worthy of respect and are set out with great cogency.

[1] Brit. Med. Jour., July 14th, 1906.

The New Physics and Chemistry: A Series of Popular Essays on Physical and Chemical Subjects. By W. A. SHENSTONE, F.R.S. London: Smith, Elder, and Co. 1906. Pp. 360. Price 7s. 6d. net.

THESE charmingly written essays which first appeared in the *Cornhill Magazine* will be welcomed in this reprinted form. Mr. Shenstone has the rare gift of presenting a difficult subject, like that of the atoms and the ether, in an intelligible light even to those whose education has not been specially directed to the subjects concerned. Most people nowadays know something of what we may call the old physics and chemistry but as yet they can only be expected to have a very limited idea of electrons and radio-activity the recent development of which has in reality led to the title of Mr. Shenstone's book. The bearing of modern study on the nature of matter is therefore the subject discussed in these essays, of which there are 14 in number, all written in language as plain as it is possible to employ in the circumstances. From the popular point of view Mr. Shenstone perhaps runs the risk of worrying his reader most with theoretical considerations in the essay on Carbon and the Shapes of Atoms (p. 260). Taking his cue, however, from John Dalton, the founder of the atomic theory, Mr. Shenstone avoids such a risk by adopting graphic representation. Dalton a century ago, in order to expound the atomic theory to a series of educated but non-chemical audiences, carried with him for the use of those who attended his lectures a number of printed sheets on which his ideas were expressed graphically by means of a system of chemical symbols, his view being that the same symbols which had helped him would help also any other educated person who might attempt to follow his arguments. Mr. Shenstone thus lures his reader on to an easy assimilation of such phenomena as isomerism, the asymmetric carbon atom, or, in a word, stereochemistry. He excites the mental appetite of the reader by instancing the fact that it has been calculated, to give one example, that no less than 802 substances (tri-decanes) may possibly exist, each of which would have distinct properties and yet would be indistinguishable from the rest by chemical analyses since every one of them contains the same proportion of carbon and hydrogen and corresponds to the same chemical formula. Here, as he explains, it is structure or constitution that is concerned and not mere composition. In an equally interesting way does he tell the story of radium, of the recent theories of the ether, of ferments and fermentations, of solutions, and so forth. Finally, we come to the essay on the origin of life, in which he narrates how

men have fought over the momentous question, Is life biogenic or abiogenic in its mode of origin? Does it appear, he asks, that anyone has prepared from sterilised bouillon, by the action of radium, or in any other way living organisms capable of multiplying either by repeated subdivision or by means of spores, or capable of producing definite fermentative changes such as those which we associate with so many of the organisms hitherto investigated? "No such discovery has been recorded, nor has anything been observed which would justify us in supposing that we are on the verge of making such a discovery at the present moment." This statement appears after the author has considered the *de novo* theory of Dr. Charlton Bastian and the radiobe theory of Mr. Burke.

We have indicated enough to convey what a really interesting book this is and what pleasure and profit it will afford to the reader keen upon adding materially to his sum of sound knowledge.

Clinical Lectures on Neurasthenia. By THOMAS D. SAVILL, M.D. Lond., Physician to the West End Hospital for Diseases of the Nervous System, London; and to the St. John's Hospital for Diseases of the Skin. Third (revised and enlarged) edition. London: Henry J. Glaisher. 1906. Pp. 216. Price 7*s.* 6*d.*

IN our review of the first edition of this work we drew attention to its general scope and to the completeness with which the author had carried out the task which he had set himself. In the present edition the general plan has been retained but many fresh data and illustrative cases have been added and the conclusions previously arrived at have been elaborated and amplified.

Dr. Savill's views on the etiology and pathology of neurasthenia are interesting. He strongly holds the opinion that an important element in the production of neurasthenia is gastric disorder and that this latter condition brings about an autotoxic condition of the blood having deleterious effects on the nervous system. In the present edition he brings forward fresh arguments in support of his contention. An analysis of 103 cases of neurasthenia convinced him that about 80 per cent. were due to some kind of auto-intoxication. Among such auto-intoxications he mentions intestinal derangement, gastric disorder, chronic appendicitis, oral sepsis, chronic alcoholism, and tobacco smoking. Symptoms of gastric disturbance are undoubtedly very common in connexion with neurasthenia but although we have carefully considered the author's observations we are not yet convinced that these symptoms are not caused by, rather than the cause of, the neurasthenia. He makes a strong point of the gastric symptoms preceding the neurasthenic phenomena. The onset of neurasthenia, however, is very insidious and the gastric symptoms lasting over a considerable period may be the earliest symptoms of the disease rather than its determining factor. The description of the symptomatology of neurasthenia is excellent and the directions as to treatment are most valuable. The whole work is well written and will be found instructive and suggestive, and as such we can cordially recommend it to our readers.

MEDICINE AND THE LAW.

Burning Bodies in Private Houses.

BY Section 8 (3) of the Cremation Act, 1902 (2 Edw. VII., c. 8), "every person who, with intent to conceal the commission or impede the prosecution of any offence, procures or attempts to procure the cremation of any body, or, with such intent, makes any declaration or gives any certificate under this Act shall be liable to conviction on indictment to penal servitude for a term not exceeding five years." In Rex *v.* Byers, tried before Mr. Justice Kennedy at the Central Criminal Court on Feb. 1st last, a woman was indicted in four counts under this subsection for that she, with the intent to conceal the commission of certain offences therein specified, procured the cremation of certain dead bodies. The evidence for the prosecution was that the bodies, which were those of children, were burnt by the prisoner in a kitchen range or stove in the prisoner's own house. Counsel for the defendant having submitted that "cremation" in the section did not mean burning, but burning in a crematorium, it was held that there was no evidence on these counts "of procuring the cremation of any body" to go to the jury. Cremation is not illegal unless it is so carried out as to amount to a public nuisance at common law. If an inquest ought to be held upon a dead body, it is a misdemeanour so to dispose of the body so as to prevent the coroner from holding the inquest. Mr. Justice Stephen in Regina *v.* Price (12 Q.B.D. 248) said: "It is essential to this offence that the inquest which it is proposed to hold is one which ought to be held. The coroner has not an absolute right to hold inquests in every case in which he chooses to do so. It would be intolerable if he had power to intrude without adequate cause upon the privacy of a family in distress and to interfere with their arrangements for a funeral. Nothing can justify such interference except a reasonable suspicion that there may have been something peculiar in the death, that it may have been due to other causes than common illness. In such cases the coroner not only may, but ought, to hold an inquest, and to prevent him from doing so by disposing of the body in any way—for an inquest must be held on the viewing the body—is a misdemeanour." In Regina *v.* Stephenson (13 Q.B.D. 331) it was held that it is a misdemeanour to burn or otherwise dispose of a dead body, with intent thereby to prevent the holding upon such body of an intended coroner's inquest, and so to obstruct a coroner in the execution of his duty, in a case where the inquest is one which the coroner has jurisdiction to hold. A coroner has jurisdiction to hold, and is justified in holding, an inquest if he honestly believes information which has been given to him to be true which, if true, would make it his duty to hold such inquest. Mr. Justice Grove in that case said: "It is most important to the public that a coroner who on reasonable grounds intends to hold an inquest should not be prevented from so doing. The consequences would otherwise be most formidable, especially in the case, I fear, of young children, for anyone might prevent the holding of an inquest by the destruction of a dead body with impunity, unless it could be proved that the death had been caused by violence. The only evidence might be the examination of the body itself. It might be that the only witness of the death was the murderer of the person found dead. To hold it no offence to prevent the administration of the law by preventing an inquest being held unless proof could be given of the cause of death, and that it was a violent cause, would set at nought the protection which there is at present to the public. A coroner acts, and ought to act, upon information, not upon conclusive evidence. A coroner's inquiry would be useless if the coroner previously had by evidence to satisfy himself of the cause of death. If it is a crime to bury, *a fortiori* it is one to burn a body, because if you bury exhumation is possible, but if you burn the body is destroyed and examination is no longer possible." As we have seen cremation is not illegal unless it is carried out so as to amount to a public nuisance at common law. Nuisances may be divided into two main headings—viz., (1) public nuisances which injuriously affect the welfare of the community and are dealt with by, or in the name of, the Crown, or by corporate bodies specially authorised by statute to intervene; and (2) private nuisances which specially affect individual persons or their property and for the suppression of which the individuals aggrieved are entitled to invoke the assistance of the courts.

The Diagnosis of Gonorrhœa.

The diagnosis of gonorrhœa is often in question in the law courts and as a general rule the medical witness has had to admit that his examination has been inadequate in order to enable him to give a definite opinion. This was well exemplified in the Divorce Court about a fortnight ago. The petitioner in the suit in question desired a divorce on the ground of her husband's alleged adultery and cruelty. She relied on the fact that she had had gonorrhœa to prove the former charge. The medical man who attended her stated that in his opinion there was little doubt that she had gonorrhœa when he saw her. The respondent (the husband) did not make any accusation of infidelity against his wife but had suggested to her that she must have contracted it from a water-closet seat. He himself went to the medical man and the

latter said at that time he found no trace of gonorrhœa. In answer to the judge the medical witness admitted that he had made no microscopic test and that it was, of course, possible that the petitioner's condition might have been due to leucorrhœa or from some pyogenic source. The jury found the charge of cruelty proved but not the one of adultery. This case might have had a different conclusion had a more careful examination been made; the absence of the microscopic test let in the admission of other possibilities. These, coupled with the fact that at the time the husband was apparently free from the disease, naturally weighed strongly with the jury. Such an incident may suggest to all medical men the desirability of a systematic and thorough examination in cases of married men and women seeking their advice about gonorrhœa, for proceedings in a court of law may follow, and though in their own mind there may be no doubt as to the diagnosis an expert's evidence is decidedly weakened by admissions of other possible causes for the condition.

Death of a Patient after leaving Hospital: the Jury's Comment.

The coroner for North Warwickshire (Mr. C. W. Iliffe) has sat at Coventry on two days hearing the evidence as to the cause of death of a woman named Sarah Ann Benny. She was admitted to the Coventry and Warwickshire Hospital on Jan. 1st, suffering from a wound in her throat. On the 18th of the month she was sent to an isolation ward. Some days later the deceased was allowed to go to the police court to answer a charge of attempted suicide and from there was removed to the workhouse infirmary (of which the coroner is medical officer), and she was then in an exhausted condition and died in a day or two. The adjourned inquest was held on Feb. 1st when the hospital authorities were represented by a solicitor. Dr. A. Hawley, one of the honorary medical staff, then stated that the woman's wound progressed satisfactorily and he did not think there was anything in her physical condition to prevent her being removed, but he had come to the conclusion that going before the magistrates caused the deceased a shock from which she never rallied and she died from syncope. Dr. Barton, senior house surgeon at the hospital, stated that when the deceased went from the institution there was no indication of her being in a dying condition. The jury returned the following verdict:—

That the deceased died from syncope arising from shock by being removed from the Coventry and Warwickshire Hospital when in an unfit state to be removed. The jury also think that before a patient is removed from the hospital to appear before the magistrates on any charge, there should be a doctor's certificate that such patient is in a fit and proper state to be removed.

The suggestion of the jury that in the case of a patient going directly from a hospital to a court of justice to answer to a criminal charge there should be a positive certificate of fitness to appear (instead of a negative certificate of unfitness in cases where the patient is too ill) has a good deal to commend it. It would, however, require more than the approval of the hospital authorities before it could be enforced. It seems safe, however, to conclude that the unfortunate death recorded was not one which could have been foreseen or avoided by the medical men in charge of the deceased. These had no duty except towards their patient and would have had no hesitation in certifying her as unfit to be brought before the magistrates had they believed that her physical condition was such as to justify them in doing so.

THE REPORT OF THE MEDICAL OFFICER OF HEALTH OF THE ADMINISTRATIVE COUNTY OF LONDON.

III.[1]

IN continuing our notice of this report we remark that Londoners experienced in 1905 exceptional freedom from the ravages of ordinary infectious ailments, the death-rate from the principal epidemic diseases having been lower than in any previous year specified in the table. The spread of infectious disease in an urban community is so intimately connected with school attendance at susceptible ages that Sir Shirley F. Murphy has prepared for the present report a diagram showing for measles, whooping-cough, and diphtheria the mortality curves in successive periods since 1861–70. The diagram further compares the mortality at several groups of ages in 1901–05 with that in the three decades immediately preceding, the earlier of these periods being selected for this purpose because in 1870 the Elementary Education Act came into operation in the metropolis. On examining the curves in this diagram we note that, as compared with those of periods antecedent to 1870, the death-rate in the first two years of life from both measles and whooping-cough has declined less than at other ages. In the case of measles the decline at school ages also has been retarded, whereas in the case of whooping-cough the maintenance of mortality at these ages compared with other ages is not so conspicuous. In this connexion it is noteworthy that the decline in the whooping-cough death-rate at "all ages" has been much greater than the decline in the measles rate; thus, the whooping-cough death-rate at all ages in 1901–05 was 60 per cent. below the corresponding rate in 1861–70, whilst the measles death-rate in the later period was only 22 per cent. below the rate in the earlier. With regard to the behaviour of scarlet fever in this respect Sir Shirley Murphy remarks that beyond the fact that the period 1861–70 was one of excessive mortality and that the scarlet fever death-rate in 1901–05 was little more than half that in 1861–70, no modification of the statement made by him in his report for 1897 is requisite at the present time. Respecting the behaviour of diphtheria in late years the diagram indicates that whilst the excessive incidence of mortality upon the school age is still a conspicuous feature of that disease, nevertheless in the last four years that excessive incidence has been much less marked than during the decennial period of epidemic prevalence which preceded those years. It is worthy of remark, however, that notwithstanding the fact that diphtheria mortality in 1901–05 was 54 per cent. below the average in 1861–70, the rates at ages 5 to 10 and 10 to 15 were below the corresponding rate in 1861–70 by only 1 per. cent. and 7 per cent. respectively. In order to emphasise the fact, referred to in his report for 1897, that the incidence of diphtheria at school ages is ordinarily greater than at other ages, Sir Shirley Murphy has prepared a table which shows that whereas the mortality of that disease at ages 3–15 years began to decline after the year 1893, and has continued so to do ever since that year, nevertheless the relatively increasing incidence of that mortality at school ages was continued until the last three years, during which it has been distinctly lower, whilst the relative incidence of attacks at those ages appears to have been maintained up to the present time. The decline in the general death-rate from diphtheria, which the report shows to have prevailed in the metropolis in recent years, has also been manifest throughout England and Wales, as shown by the reports of the Registrar-General. How far the more general use of antitoxic serum in the treatment of diphtheria may have influenced the result cannot as yet be stated, but it is worthy of mention that increasing use of this serum has been made in the hospitals of the Metropolitan Asylums Board ever since the year 1894.

Broadly speaking, the lesson to be learnt from this instructive diagram may be stated to be that the incidence upon the school age tends to become most conspicuous in periods of greatest prevalence. In the case of measles, in 1881–90—a period of excessive prevalence—the curve shows the greatest incidence in the school-age period of life, just as the curve for the succeeding decade teaches the same lesson in the case of diphtheria. "It would therefore appear," Sir Shirley Murphy proceeds, "that in any estimate as to the amount of observed increase in the mortality in any periods compared, which can be thought of as associated with increase of school attendance, account must be taken of the relative prevalence of the disease under consideration in the two periods; and probably also consideration would have to be had for the question whether the tendency of the prevalence was in the direction of increase or decline."

The recent appearance of the second interim report of the Royal Commission on Tuberculosis lends particular interest to the behaviour of the chief form of that infection in the metropolis, as shown in the present report. In dealing with pulmonary tuberculosis we observe that in the

[1] Previous notices of this report appeared in THE LANCET of Jan. 19th, p. 185, and Feb. 2nd, p. 320.

present, as in some other reports, the term "phthisis" is very commonly substituted. In view, however, of the desirability of attaining the utmost precision in medical nomenclature we think that either the term "pulmonary tuberculosis" or else its authorised equivalent "tuberculous phthisis" should invariably be used. Tracing back the incidence of pulmonary tuberculosis through a long series of years Sir Shirley Murphy shows that there has been in London a steady fall in the prevalence of this disease in each successive decade of the last five, the mortality rates in the earlier of these periods having been equal to 2·86 per 1000 living and having fallen in the later period to 1·84 per 1000. In individual years since the opening of the present century the fall, although still considerable, has been more interrupted. Respecting the incidence of fatal tuberculous phthisis among the several metropolitan districts Sir Shirley Murphy tells us that both in the year 1905 and in the previous four years Holborn had the highest rate and Hampstead the lowest. For comparative purposes the rates for every one of the districts have been fully corrected. With respect to the measures taken by the several metropolitan authorities for the limitation of this disease, we learn from the report that they have generally been based on the view of the communicability of infection from the sick to the healthy by means of the sputum. It is well known that the *compulsory* notification of tuberculous phthisis has not been attempted in London. But a list is given in the report contrasting the sanitary areas that have adopted, with those that have not adopted, the system of *voluntary* notification. During the year 1905 there was notification of this kind in 19 out of 29 sanitary areas of London.

The state of things revealed by voluntary notification of this disease in London is extremely interesting and must be referred to briefly. It would appear from the reports of the district medical officers of health that the public is, in increasing degree, coming to recognise the desirableness of following the directions deemed to be necessary in dealing with this disease. In cases coming to the knowledge of the local authorities advice is given both orally and by printed circular as to the precautionary measures to be adopted in dealing with the sputum, as to the maintenance of cleanliness in the home, and as to the ventilation of the rooms occupied by persons already suffering from the disease. In cases of death or of removal of the patient the sanitary authority undertakes the disinfection of the apartments, &c., occupied by the sufferer. In some of the local reports the number of cases is stated in which there had been exposure to antecedent tuberculous infection. Thus Dr. S. Davies, the medical officer of health of Woolwich, states that of 145 cases there notified 44 were probably infected by relatives; Dr. G. Newman of Finsbury reports that 32 per cent. of the total deaths from pulmonary tuberculosis occurred in houses already infected, and Dr. Reginald Dudfield of Paddington records a history of previous infection in the family in 35 out of 112 cases occurring in that borough.

As regards the "housing" of persons actually suffering from this disease, Sir Shirley Murphy pertinently remarks that "it is obvious that if administration is to be based upon the view that phthisis is communicable from one person to another, the home conditions of the sufferers should be considered in the selection of cases for removal to hospital, and hence the necessity for bringing the administration of sanitary authorities into relation with that of those authorities concerned with hospital provision."

The report contains a table showing the relation of overcrowding to mortality from pulmonary tuberculosis in London. We may summarise the teaching of this table by saying that whilst in those districts in which the amount of overcrowding in small tenements does not exceed 8 per cent. the corrected death-rate from this disease is represented by the number 717 (the rate in London generally being taken at 1000); in those districts where the degree of overcrowding exceeds 28 per cent. the comparative figure is nearly double the other, and amounts to 1390. In addition to the measures adopted in 1905 by the borough councils for the limitation of pulmonary tuberculosis in their several districts, the London County Council, on the advice of its medical officer, communicated to each of the sanitary authorities a memorandum, prepared by him on the subject of voluntary notification of pulmonary tuberculosis, which contained suggestions for obtaining information concerning the cases of the disease attending the out-patient department of hospitals, with a view to the address of patients being communicated to the respective sanitary authorities.

The interim report of the Royal Commission on Tuberculosis, to which we have already alluded, will doubtless give a fresh impetus to the efforts already being made in the metropolis for the control and prevention of pulmonary tuberculosis and of these further efforts we shall doubtless be apprised in Sir Shirley Murphy's next annual report.

New Inventions.

FRONTAL SINUS PROBE CALIPERS.

OFTEN when probing the frontal cavity it is of advantage to know for certain where the end of the probe actually stops and the most useful point with which to compare it is the surface of the forehead over the anterior wall of the sinus. With this end in view I have designed the following calipers, and their method of application is as follows. After probing with an ordinary probe to find the fronto-nasal duct the lower of the two arms of the calipers is bent to the same curve as that which has been found by trial with the ordinary probe to be best. The second, or outer, probe is then bent so as to make its point meet that of the other, and then the first is introduced as far as possible; the second, or outer, is swung round to touch the forehead, and the scale is read. Then the outer probe is swung back and the instrument is removed, the probes are replaced so that the reading on the scale is the same, and the distance between the two ends of the probes is measured. The scale is necessarily arbitrary, as the radius length of the probes varies. The distance between the ends of the probe, even when properly inserted into the cavity, naturally varies, and I have not yet had sufficient experience to lay down actual measurements, but anything under 2·5 centimetres may be considered as in the cavity. As will be obvious, the instrument is applicable to any measurement with reference to the surface within its reach. It has been made with great care for me by Messrs. Mayer and Meltzer, 71, Great Portland-street, London, W.

S. HORACE LAW, M.D.Dub.,
Surgeon to the Dublin Throat and Ear Hospital, and Throat Surgeon to the Adelaide Hospital.

DONATIONS AND BEQUESTS.—The sum of £20,000 is left to St. George's Hospital, Hyde Park Corner, London, under the will of Miss Anna Newton.—The late Mrs. C. Dando has bequeathed £507 to the funds of the Royal Hospital for Children and Women, Bristol.—Miss Standering of Selby has undertaken to erect, to equip, and to endow a hospital for the use of women and children of Selby, to which will be added an operating theatre and other buildings for the joint use of the patients of Brooke Dispensary and Cottage Hospital. The institution will be called "The Standering Memorial Ward," in memory of the donor's late brother and sister. The hospital will be endowed with £3000, exclusive of the cost of its site, its erection, and its equipment.—By the will of Mr. Alderman J. Symons of Hull the Royal Infirmary, Hull, will receive £20,000 for the acquisition of new buildings.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 23, 1907.

The Hunterian Oration at the Royal College of Surgeons of England.

IT may be doubted whether the annual oration in memory of JOHN HUNTER, established by Dr. MATTHEW BAILLIE and Sir EVERARD HOME 94 years ago, has on any previous occasion paid to that memory so great or so adequate a tribute as that of Mr. H. T. BUTLIN on Feb. 14th. As he truly said, we have been accustomed to hear so much of the high qualities by which HUNTER accomplished the work of his life, of his perseverance, of his industry, and of his skill, that our minds have been somewhat diverted from the true character of that work, and we have to a great extent lost sight of the philosopher in the surgeon, or of the goal in our admiration of the energy displayed upon the course. Regarded from Mr. BUTLIN'S point of view, HUNTER was less an eminent surgeon, bringing a great variety of painfully collected knowledge to bear upon the performance of his daily duties, than a physiologist who anticipated what still needs to be impressed upon many, even among our own ranks, namely, that the key to the prevention or treatment of disease must be sought, and can only be found, by the investigation of natural function. "He rightly judged," to use the words of Mr. BUTLIN which appear in another column, "that they who treat diseased bodies should have an intimate acquaintance with the structure and functions of those bodies in health; that they should know, so far as such knowledge is possible, the changes which those bodies undergo in the progress of disease, and the further changes which they undergo in the progress towards recovery." The position thus stated was one which few or none of HUNTER'S predecessors or contemporaries had reached; it is one beyond which the science of our own day has not been able to proceed. At the very time when Mr. BUTLIN was engaged in the preparation of his discourse, Professor E. H. STARLING was telling the Royal Commission on Vivisection that just as the mechanical sciences represent man's struggle for the control of the energies available in his environment, so the medical sciences have as their ultimate aim the acquisition of a control over the functions of man's body which can only be obtained from knowledge of the manner in which these functions are normally carried out; and was describing it as "obvious" that it is impossible to achieve any advance in the science of medicine, that is, in the treatment of disordered functions of the body, without an accurate knowledge of these functions themselves. Hence, he concluded, physiology must be the foundation of medicine, and any advance in physiology must ultimately influence and advance medical science and treatment. This, Mr. BUTLIN assists us to perceive, was, if not HUNTER'S position in very words, at least the guiding idea of his labours; and as such it entitles him to take rank, not only with the most eminent members of his own calling, but with the small band of philosophers whose researches, in various departments of learning, have gained for the human race its power to guide and to utilise the forces of nature. It separates him from even the highest ranks of any single profession, and places him, by the side of BACON and NEWTON, upon a pinnacle which it is given to very few to attain.

Mr. BUTLIN is greatly to be congratulated, we think, not only upon the originality and breadth of view which have enabled him so clearly to discern the chief intellectual characteristics of his hero, and upon the lucidity of thought and language with which these characteristics have been conceived and expressed, but also upon the singular fitness of the time at which his discourse has been given to the world. It is impossible to doubt that a period is at least approaching, even if it be not in some degree already with us, when the more intelligent members of the community will cease to think of medicine and surgery as mysteries, and of those who follow these callings either as empirics or as miracle workers, and will seek to obtain some knowledge of the principles which underlie the daily operations of their own bodies and of the means by which these are most commonly perverted or disturbed. Medicine and surgery are rapidly becoming in the proper sense of the word "scientific," and the so-called "practical man" who understands the "constitutions" of the patients whom he habitually attends is in course of being superseded by him who understands the nature and sources of the maladies with which he is required to deal. The change is being accompanied, like most other changes, by accidental consequences which are not always desirable, and among these we may easily note a vast development of the forms of quackery which imitate science, or which at least levy contributions upon the somewhat Hudibrastic vocabulary of some of its professors. Hypocrisy has been described as the homage which vice pays to virtue; and the methods of appeal now used by quacks are an evidence of their belief that some simulacrum of definite knowledge is necessary to the profitable conduct of imposture. If they are correct in this opinion (and rascals are generally shrewd enough in all that concerns the success of their undertakings) we may reasonably hope that public attention is being gradually directed towards the genuine sources of medical science and towards the only safe channels for its application. The discoveries of recent years, such as that of the means of communication of intermittent and of yellow fevers, or of the conveyance of Malta fever by the milk of apparently healthy goats, are in many cases of such a kind as to appeal strongly to all persons of good natural intelligence, and more strongly still to all in whom natural intelligence has been cultivated by any real education. In the conduct of researches into the causes of disease, and in many other ways, those who are concerned in the advancement of medical knowledge are daily establishing their claim to rank with the most advanced workers in the domain of physical science and to rest their conclusions upon equally

unassailable grounds. Mr. BUTLIN'S demonstration that the foundations of what may be called modern surgery were laid upon a basis of genuine philosophy, using the word in its original and widest sense, will come as a welcome reinforcement to those who are still working upon the same lines and are seeking the same ends by the employment of similar means.

In other words, it may fairly be said that both the history and the present position of the medical sciences are such as fully to justify the employment of this designation and to give to those who are engaged in pursuing them an unquestionable right to regard alike their studies and their practice from a purely scientific point of view. In precise proportion as this is realised by the public will be the growth of confidence in the soundness of medical conclusions and in the value of medical advice; and to assist in such realisation would be the greatest public service which the profession, acting either as individuals or through corporations or other organised bodies, could now render to the State. It is a necessary result of the deplorable neglect of science in ordinary education that much of the seed relating to scientific knowledge must still be scattered upon stony or barren ground, and that no adequate perception of scientific certainties is within the reach of the common forms of so-called "intelligence." Probably not one "educated" householder in 500 could explain why it is that an electric bell in his house rings when he presses a button; and, as long as this continues to be true, we must not be surprised at the inability of a Minister of State to realise that an increased occurrence of small-pox epidemics will not only be rendered probable, but will be assured, by any relaxation of the vaccination laws; or that such epidemics would be absolutely prevented, and rendered impossible, by such enforcement of revaccination as obtains in Germany. If these facts were once clearly understood, even if only as the most uneducated people understand that a lighted match will set fire to a hayrick, or that an explosion will follow the approach of a flame to escaping gas, it would be felt that no conceptions of liberty could rightly be so extended as to permit the neglect or the prejudices of any individual to become the cause of widespread calamity to his neighbours. The same principle applies to many of the most crying evils which now afflict the community and which might be removed or cured by the application of forms of truth which are possessed by the medical profession, but of which the value, and above all the certainty, is not yet realised by the public. At present the leaders of the nation seem to prefer the guidance of ignorance to that of knowledge and those whom they lead are apparently content to follow them; but nevertheless there is at least some evidence of rifts in the cloud of darkness and it should be one of our functions to endeavour to extend and to widen them. Mr. BUTLIN has done good service by his demonstration that the department of science with which he is most concerned was placed, more than a century ago, upon a basis of sound principles, with the result that much of the superstructure must remain for all time as a safe refuge from ignorance or from doubt. We can only hope that the effect of his labours may be commensurate with their value and their importance.

Mortality of the Insane.

THE late Dr. WILLIAM FARR in a paper read by him before the Statistical Society in 1841, entitled "Report on the Mortality of Lunatics," called attention to a then recent action brought by the executors of a clergyman to recover £2000 from the Providence Assurance Company, being the amount of a policy of assurance effected upon his life. In charging the jury the judge instructed them that they had to consider whether insanity had a tendency to shorten life, that if insanity had such a tendency they must find for the defendants, and if not for the plaintiffs. The medical evidence was said to be conflicting, and the jury after a short deliberation found for the plaintiffs on the extraordinary ground that insanity had no tendency to shorten life. In point of fact, very little was known of the true import of rates of mortality, either among the general population or among the insane, before the enactment of the civil registration of births, deaths, and marriages in 1837. Dr. FARR, however, in the paper referred to pointed out that the mean rate of mortality among the inmates of Bethlem Asylum during the 12 years 1827–39 was equal to 90 per 1000 and came to the conclusion that "the mortality is three times greater among lunatics than among the general population at the same age."

The published statistics of the Commissioners in Lunacy show that even Dr. FARR very considerably understated the excess in the death-rate of the insane compared with that of the general population at equal ages, though, as a matter of fact, the two conditions are not fairly comparable. The mean annual death-rate among the inmates of the county and borough asylums, hospitals, licensed houses, State asylums, and private single patients during the 13 years 1893–1905 was equal to 97·3 per 1000 of the average number resident, and the annual rate during that period ranged from 93·2 in 1894 to 104·0 in 1902. In order to be able to compare the mortality of the certified insane with that of the general population it is, of course, necessary to know the ages of the insane, as well as the ages at which the deaths of the insane occur. A valuable table, published in the last report of the Commissioners in Lunacy, supplies the necessary material for calculating the excess of mortality at different ages due to insanity among the inmates of lunatic asylums, registered hospitals, and licensed houses. This table shows at 12 groups of ages both the number of the certified insane and of the deaths occurring among this insane population (95,940) in the year 1904, together with the rate of mortality of the male and female insane, compared with the mortality of males and females in the general population at similar age-groups. The number of the certified insane under the age of 15 is so small that it is necessary to restrict the comparison to ages above 15. The annual rate of mortality in England and Wales in 1904 among the general population aged above 15 years was equal to 14·5 per 1000; whereas the rate among the 94,612 certified insane at the same ages dealt with in this table was equal to 97·9 per 1000. Thus, in equal numbers living, of both sexes at similar ages, the mortality of the insane was nearly seven times as high as the mean mortality among the general population; it was equal to 675, the mortality among the

general population being taken as 100. The excess in the mortality of the insane is, as might be expected, far greater at the earlier ages and rapidly decreases at the higher age-groups. For instance, among the insane aged between 15 and 25 the mortality in 1904 was equal to 2030, compared with that in the general population taken as 100; thus to each death at these ages in the general population there were more than 20 deaths among the certified insane. Between 25 and 45 there were 1075 deaths among the insane to 100 in the general population; between 45 and 65 the mortality of the insane was as 437 to 100; and among the insane over 65 years of age it did not exceed 245 to 100.

It appears from these statistics that the mean mortality of the certified insane at the present time does not materially differ from the rate that prevailed in Bethlem Asylum during the years 1827–39, referred to by Dr. FARR in his paper read before the Statistical Society in 1841, but that the excess of mortality due to insanity very considerably exceeds that estimated by Dr. FARR in the paper referred to. It may be hoped that the Commissioners in Lunacy will publish a corresponding table in subsequent reports, as similar statistics from year to year will throw much valuable light upon the important problem of the alleged increase of prevailing insanity.

A Chapter in the History of the Midwives Question.

OF the various influences which played a part in procuring the adoption and enactment of the Midwives Act, 1902, none was more important than that exercised by the Obstetrical Society of London. In a most interesting article entitled "The Obstetrical Society of London and its Examinations for Midwives," by Dr. C. J. CULLINGWORTH, published in another column, a sketch is given of the gradual development of the movement for the better training of midwives and the part played by the Obstetrical Society of London in the promotion of this important object. The origin of the whole question is to be found in a request made by Dr. W. FARR, at that time superintendent of the statistical department in the office of the Registrar-General, that the society should assist him in obtaining information as to the management and treatment of babies in London and in the several parts of England. This request led to the appointment of a committee of the society which was able to furnish Dr. FARR with what he described as a "valuable contribution to the natural history of the British baby." In the following year (1870) a further committee was appointed to draw up a report on the changes in the laws which appeared to be necessary in order to obtain greater security for infantile life. In connexion with this committee another was appointed to consider what, if any, steps might be taken for the promotion of obstetric education in the interests both of the public and of those working in obstetric medicine. It is in the report of this committee that the suggestion was first made that there was an urgent need of some examination by which the knowledge of women practising as midwives should be tested so that patients might have some means of protecting themselves against the gross ignorance so common amongst these women.

The result of the report of this committee was not only the drawing up of a series of suggestions for legislative enactments but also the institution by the Obstetrical Society of an examination for midwives. The first examination was actually held in 1872, the number of candidates remaining for many years a very small one. From that time onwards these examinations for midwives were held by the Obstetrical Society each year, and up to the date at which the examinations ceased, on the coming into operation of the Midwives Act in the year 1905, no less a number than 12,805 women had submitted themselves for examination by the society's examiners. Of late years the numbers of candidates presenting themselves had undergone a very large increase indeed, and the society's certificate was recognised as evidence of its holder's competency to attend ordinary cases of labour by a large number of bodies, such as the Army Medical Department and various nursing and maternity societies. Until the year 1891 the society, besides holding these examinations, played an important part in endeavouring to promote legislation for the better training and registration of midwives. For various reasons fully set forth by Dr. CULLINGWORTH its efforts bore little fruit, and they were at last, wisely we think, abandoned by the council of the society. A number of the Fellows of the society sympathised with a widely spread feeling among medical men, especially among general practitioners, that the recognition of midwives either by Parliament or by any voluntary examining body was a professional and also a social error, and no doubt this fact had a good deal to do with a change in the policy of the council. At any rate from this time onwards the Obstetrical Society of London played no further official part in the political aspect of the question, but devoted itself to carrying on the work which it was doing, holding its examinations and endeavouring to further the training of those who had obtained its certificate by drawing up a code of rules and regulations for their guidance. In view of the fact that it was obviously impossible for a voluntary association such as the Obstetrical Society of London to organise anything like an adequate system of supervision over those who held its certificate it is certainly surprising that the disciplinary difficulties which arose were so few in number. Anyone who reads the story so clearly related by Dr. CULLINGWORTH will feel that Dr. W. R. DAKIN had good grounds for his words when he said, speaking as chairman of the Midwives Board of the Obstetrical Society of London, that "the society had succeeded in raising the standard of education of the midwives of the country and in helping to safeguard its mothers and children." Dr. DAKIN was claiming no greater credit for the society than was its due, but the society hardly perceived the political scope of its own work or the professional difficulties created. It did not anticipate that a certain number of its certificated nurses, using the certificate of the society as an excellent imitation of a genuine medical diploma, would usurp a professional position and transgress the Medical Acts. This aspect of the question led to considerable acrimonious criticism of the society, in the course of which the really philanthropic nature of its labours was a little lost sight of. Dr. CULLINGWORTH'S statement may not reconcile all former foes to the tactics of the society, but the good faith with which the society acted will be generally allowed

The Midwives Act, now an accomplished fact, owes its being, of course, largely to the Obstetrical Society of London. As long ago as the year 1873 a deputation of the Obstetrical Society waited upon Mr. JAMES STANSFELD, the President of the Local Government Board, for the purpose of laying before him its views with regard to the instruction, licensing, registration, and supervision of midwives. A deputation from the Parliamentary Bills Committee of the British Medical Association had recently attended before him with the same purpose. No result followed these or many subsequent deputations and, as our readers are well aware, the promoters of different Midwives Bills were subject to many delays before attaining their desired object. And when legislation resulted it was not satisfactory in many details, even to the section of the medical profession who had helped to promote it. The real results of the working of the new Act cannot as yet be estimated. It will require a large amount of evidence from all parts of the country to enable a correct judgment to be formed. The Act still meets with a considerable amount of opposition, but the midwife is always likely to be with us—she may truly claim that she preceded in point of time the man midwife—and it is certain that no legislation will ever be introduced to bring about the result desired by some of abolishing the midwife entirely. If, then, we are to have midwives they must be, as they are in all civilised countries, under proper supervision and control. No doubt the Act can, and will, be improved in the future, and what all of us medical men, whether we were for or against legislation in the past, have now to do is to see that such improvement proceeds along proper lines. An amendment which calls for immediate attention is the necessity of providing some means for remunerating those medical men who must in certain conditions be called in by all midwives under the provisions of the Act, for only in this way will the public learn to appreciate the difference between the obstetric physician and the midwifery nurse. When the right place in the scheme of the trained midwife is appreciated by the public we shall see a decided lessening of the death-rate from septic diseases in connexion with child-birth. The education of medical students in these matters is undoubtedly improving and a corresponding improvement in the available nursing cannot but result in the saving of many human lives. The Obstetrical Society of London owes a debt of gratitude to Dr. CULLINGWORTH for the labour which he has expended in drawing attention to this chapter in its history.

Annotations.

"Ne quid nimis."

THE AMALGAMATION OF MEDICAL SOCIETIES IN LONDON: THE NAME OF THE NEW BODY.

A MEETING of the members of the various medical societies in London concerned in the amalgamation scheme was held on Feb. 19th at the Royal College of Physicians of London, Sir William S. Church being the chair. Sir William Church stated that in order to secure a charter for the new society without undue delay it was necessary that a name should be chosen for the new body, and it was intended to obtain the desired charter by applying for a supplementary charter to that held by the Royal Medical and Chirurgical Society. Sir Richard Douglas Powell then suggested that the name should be "The Royal Society of Medicine" and the proposal was seconded by Mr. J. Warrington Haward. Sir Felix Semon, seconded by Dr. J. J. Macan, put forward the name of "The Royal Academy of Medicine." After the meeting had considered and rejected the suggestion that the name should be "The Imperial Academy of Medicine," the chairman asked the members to vote on the name of "The Royal Academy of Medicine" with the result that it was rejected by 86 votes to 75. The meeting then agreed without voting that the name of the new society shall be "The Royal Society of Medicine."

SOME POINTS IN DIABETES.

Dr. S. A. Arany, whose experience at Carlsbad gives him the opportunity of observing many cases of diabetes, has forwarded a communication to us dealing with certain points in the symptomatology and treatment of the disease. He recalls the fact that the elimination of sugar—i.e., the glycosuria—as well as the elimination of acetone and acetic acid—i.e., the breaking down of bodily tissue—increase during the colder part of the year. The loss of bodily heat being greater during the winter than in the warmer seasons of the year in the diabetic as well as in the healthy individual, the greater loss of heat must be replaced by a greater production of heat, which process is accomplished without any difficulty by the healthy individual, but not so by the diabetic. The diabetic, in order to replace the greater loss of heat, has to produce a greater amount of heat, which process is partly done by the ingestion of a greater amount of food and partly by the breaking down of bodily tissue. However, the diabetic patient's production of heat is much smaller than that of a healthy individual and, therefore, the diabetic is compelled to replace part of the heat required in consequence of the greater loss by using up his own bodily tissue, which process in its turn gives rise to the production of sugar, acetone, and acetic acid. Dr. Arany notes further that some patients, if placed on a carbohydrate-free diet, regain after a time a certain amount of their assimilative power and are able to tolerate a certain amount of carbohydrates without having glucose in their urine. This assimilative power gets much lower in the winter and in many of the cases becomes *nil*. This shows that a diet which suited the patient during the summer does not necessarily suit him in the winter and has to be changed according to his power of assimilation. In hospital cases the difference between summer and winter does not tell so much upon the patient's condition, but as hospital patients are confined to their beds or at least to their wards they are thus protected from a greater loss of heat. It is important, therefore, to remember, Dr. Arany says, that: 1. During the colder seasons of the year diabetic patients must be given a diet containing a little carbohydrates as possible but which is at the same time rich in meat and especially in fat-stuffs, the latter being most readily converted into the amount of calories required by the patient. Alcohol is not to be withdrawn from the patient and is best given in the shape of wine which must be free from sugar, or in the shape of really good brandy well diluted by some natural alkaline mineral water. 2. The patient must be protected from a greater loss of heat. Confinement of the patient to his room during the colder period of the year is impossible, as most patients have business to attend to, and, on the other hand, bodily exercise in the shape of walking is such a warming factor in diabetes that it must not by any means be underrated. The patient must be mindful as to his clothing, especially to wear really good underclothing. A combination of

wool and silk serves the latter purpose best; it protects the body much better than a very heavy overcoat which is likely to tire the patient out even after a short walk, and as, as is well known, fatigue increases the breaking down of bodily tissue the patient has to be protected in this direction as well. 3. Finally patients of independent means, or such as can afford it, are advised to spend their winters in sunny climes. For this purpose the quieter places of the Riviera—as San Remo, Cannes, and Grasse—come first into consideration; Algiers can also be considered; whereas the very dry climate of Egypt is not so well tolerated by many diabetic patients. Although we do not consider that there is anything particularly new in Dr. Arany's observations, yet he has put his points clearly, and they are certainly such as should by no means be neglected by anyone who has the charge of a diabetic patient.

IS STONE-BREAKING INHUMAN?

SOMETIMES we are inclined to think that our humanitarian tenderness is in danger of becoming a mawkish and effeminate sentimentalism. A discussion took place a few days ago at the meeting of the Salford board of guardians on the question of stone-breaking, one gentleman saying that it was "an inhuman method of out-relief." Another said that if it were an inhuman practice the guardians were not responsible for it and they had to administer the law as it stood. The first gentleman considered that some alternative scheme should be evolved by the board that would not come into competition with other trades. This probably would prove a more difficult task for the evolutionists than even stone-breaking. A lady guardian said that they must either open the stoneyard or take the men and their families to the workhouse. The amount of work prescribed is "the breaking of 8 cwts. of stone per day, each worker to be paid in accordance with the amount of stone he breaks not exceeding the specified quantity." It may be that the able-bodied unemployed who still retain any of the independence of mind and self-respect that in these days have a hard struggle for existence prefer this kind of work to going to "the house." We have seen on country roads contented looking and, indeed, cheerful old men who evidently were unaware of their work being inhuman and whose lives had not apparently been shortened by such labour.

THE LAST ILLNESS OF GIOSUÈ CARDUCCI.

"THE illustrious patriot and poet for whom all Italy is now in mourning was of an exceptionally robust constitution," writes an Italian contributor, "and led a life of strenuous activity, mental and physical, till 1884, when the first symptoms of cerebral exhaustion began to betray themselves. He had in consequence to slacken his productive energies and to seek, summer by summer, the fresh restorative Alpine air, first of Courmayeur and then of Madesimo on the southern slopes of the Splügen. On Sept. 29th, 1899, he passed through a grave crisis due to cerebral thrombosis, from which he emerged with a slight impediment in the use of his tongue and of his right arm. From that day forth he had to employ an amanuensis to whom he dictated his work in verse and prose, rarely writing a letter even, but signing with a pencil what had been written to his dictation. Up to October, 1905, he continued his academic and literary work with the aid above indicated and, accompanied by friends, would often be seen walking about Bologna and frequenting his old places of resort. At that time, however, he had a spasmodic cardiac seizure which was so severe that it seemed to portend a fatal issue at no distant date, one of the sequelæ being a loss of power in the lower limbs which confined him to carriage exercise. Even thus he would seldom venture farther than the establishment of his friend Zanichelli, the well-known Bolognese publisher, where he would while away the afternoon in skimming the new publications. His faculties remained entire and clear till Feb. 8th when he was attacked by the prevailing influenza. Pneumonia supervened and on the 13th his temperature rose to fever heat, accompanied by distressing dyspnœa. His distinguished brother professor in the Bolognese school, Dr. Augusto Murri, was called in consultation by his regular attendants, Dr. Boschi and Dr. Dagnani, but his prognosis held out but little hope. At 11 A.M. on the 15th he was again seen by Dr. Murri and then it was only too apparent that the end was a matter of hours. In the Italian clinical phrase he had 'entered into the agonia,' and at 1.28 in the afternoon he breathed his last in presence of his family and immediate relatives. The King and Queen, the Queen Dowager, the Prime Minister, and the Presidents of the two Houses of Parliament, Upper and Lower, received the announcement immediately by telegraph and all Bologna was profoundly and visibly impressed. It is for the lay press to sum up the career of Giosuè Carducci and to pronounce on the place due to him in his country's annals. But it may interest the professional reader to know that his father was an able and accomplished practitioner on the Maremma of Pisa, where, after suffering arrest and police surveillance for intervention in the cause of Italy, he did heroic service in the frightful epidemic of cholera which decimated Leghorn and the adjacent towns, while it was to him, in the intervals of practice, that the son owed his initiation in the literature, classical and modern, of which he was ere long to become so eminent a votary and exemplar."

THE ROYAL COLLEGE OF SURGEONS OF ENGLAND: HUNTERIAN FESTIVAL.

THE Royal College of Surgeons of England celebrated the anniversary of John Hunter's birth on Feb. 14th by a dinner given at the College subsequently to the delivery by Mr. H. T. Butlin of the Hunterian Oration (see p. 481 of this issue). The President, Mr. Henry Morris, who was supported by the Vice-Presidents, Mr. Edmund Owen and Mr. Rickman J. Godlee, received the visitors and Fellows in the hall of the College, and 95 covers were laid for dinner in the library. Mr. Morris presided, the chairs at the ends of the smaller tables being taken by Sir John Tweedy, the immediate Past President of the College; Mr. Butlin, the Hunterian Orator; Professor Charles Stewart, the conservator of the museum; Mr. Frederick G. Hallett, the secretary of the Conjoint Examination Board; and Mr. S. Forrest Cowell and Mr. Victor Plarr, the secretary and librarian respectively of the College. The guests included: H.S.H. Prince Francis of Teck, Professor T. Clifford Allbutt, Mr. A. B. Atkinson, Sir S. Bancroft, Sir T. Barlow, Sir F. Bridge, Lord Cheylesmore, Mr. Coles Child, Sir W. S. Church, Mr. Justice Bargrave Deane, Alderman Dr. T. B. Crosby and Mr. W. H. Dunn, Sheriffs of the City of London, Director-General H. M. Ellis, R.N., the Right Hon. W. G. Ellison-Macartney, Dr. T. G. Foster, Mr. W. W. Grantham, Mr. Reader Harris, Sir Edward R. Henry, Sir C. Holman, Mr. W. How, Dr. Robert Jones, Sir Alexander Kennedy, Director-General Sir Alfred H. Keogh, A.M.S., the Hon. Sir Schomberg McDonnell, Sir J. McFadyean, the Right Hon. Sir H. E. Maxwell, the Earl of Onslow, Mr. Ernest Page, Mr. J. S. Phene, Sir R. Douglas Powell, Mr. C. W. Powell, Dr. P. H. Pye-Smith, Lord Reay, Sir James Reid, the Rev. Ernest F. Roberts (Vice-Chancellor of the University of Cambridge), Dr. F. Roberts, Archdeacon Sinclair, Dr. S. S. Sprigge, Sir C. V. Stanford, Sir Douglas Straight, Mr. Thomas Wakley, jun., Mr. J. W. Waterhouse, R.A., Sir J. Wolfe-Barry, Dr. Dawson Williams, Mr.

E. Lloyd Williams, and Mr. E. Parker Young. The President proposed in brief speeches the usual patriotic toasts and afterwards the assembled guests drank in silence to the memory of John Hunter. The speech of the evening was made by Mr. Edmund Owen who wittily applied the forty-fourth chapter of Ecclesiasticus to the varied *personnel* of the guests. The toast was responded to by the Earl of Onslow, Sir Herbert Maxwell, and Mr. Justice Bargrave Deane. Sir Arthur Rücker, the Principal of the University of London, then proposed the health of the Hunterian orator, whose oration was generally allowed by all those who heard it to have been a veritable triumph for its author. A few words from Mr. Butlin brought to an end a thoroughly successful dinner, upon the arrangements of which Mr. Cowell, the secretary of the College, must be heartily congratulated.

HUNTERIAN SOCIETY: ANNIVERSARY DINNER.

THE anniversary dinner of this society was held on Feb. 15th in the beautiful hall of the Skinners' Company at Dowgate-hill, E.C., the President, Mr. John Poland, F.R.C.S., being in the chair and a large company being present. The occasion marked several new departures; for the first time the anniversary dinner of the society was held in the hall of a City Company; for the first time the Lord Mayor of London and the Sheriffs were present; and for the first time the banquet was graced by the presence of ladies; all of which not only added to the dignity of the occasion and the pleasure of the evening but was most appropriate seeing that the Hunterian Society, which was founded so long ago as 1819, meets within the boundaries of the City of London. After the loyal toasts had been given from the chair the toast of "The Lord Mayor, Sheriffs, and Corporation of the City of London" was proposed by Dr. G. E. Herman and responded to in a neatly humorous speech by the Lord Mayor. Alderman Dr. T. B. Crosby, the Senior Sheriff and a past president of the society, also responded. "The Hunterian Society and President" was given by Mr. Jonathan Hutchinson and acknowledged by the President, whilst the toast of "The Guests and Sister Societies," proposed by Mr. T. Bryant, was responded to by the Right Hon. Sir Joseph C. Dimsdale, P.C., City Chamberlain, Mr. Harold A. Burke, Master of the Worshipful Company of Skinners, Mr. C. A. Ballance, President of the Medical Society, and Dr. Sidney Phillips, President of the Harveian Society. Between the toasts Miss Clara Smith and Mr. Herbert Bagnall added to the enjoyment of the company by their excellent rendering of songs. Previously to the dinner the annual oration was delivered, also at Skinners' Hall, by Dr. Lauriston E. Shaw, who founded upon Hunter's career, and managed to do so quite logically, a strenuous denunciation of the position enjoyed by examinations in our modern system of medical education. We shall publish Dr. Shaw's excellent oration in an early issue. A very successful and pleasant evening concluded with an expression of thanks to the secretaries, Dr. R. Fortescue Fox and Dr. H. Russell Andrews, for their excellent organisation of the work connected with the occasion.

WORKSHOPS AND LAUNDRIES.

A RETURN has recently been issued by the Home Office giving the number of persons employed in the United Kingdom in 1904 in workshops and laundries. The last published return was that of 1897. Comparing the recent return with that for 1897 there is apparently shown a decline, not only in the number of workshops (from 88,814 to 88,371), but also in the number of persons employed (from 676,776 to 655,912), of men employed (from 251,628 to 214,317), of male young persons (from 67,710 to 57,930), and of children (from 2737 to 2099), but there is an increase as regards the employment of women (from 250,380 to 266,853) and female young persons (from 104,321 to 114,713). It is stated, however, that if full and comparable returns were available for both years it would probably be found that there has been substantial increase in the number of persons employed therein, notwithstanding the conversion of many workshops into factories by the introduction of mechanical power. The average number of persons employed per workshop in 1904 was 7·4, as compared with 7·6 in 1897.

SOME PHARMACOLOGICAL APPLICATIONS OF THE PRINCIPLES OF ELECTROLYTIC DISSOCIATION.

THE applications of the principles of electrolytic dissociation to the elucidation of pharmacological problems have been ably set forth by Professor S. C. Maillard in recent numbers of the *Journal de Pharmacie et de Chimie*.[1] It is a well-established fact that the chemical activity of acids, bases, and their salts is due to the free ions and not to the compounds themselves. In 1896 M. Paul and M. Krönig, from a study of the action of various antiseptic substances on bacteria, ascertained that solutions containing a toxic ion in the same proportion have an identical toxic action. Thus, mercuric chloride and mercuric bromide, which are almost equally dissociated in solution, are of equal power as disinfectants in dilutions of one gramme-molecule in 64 litres, while mercuric cyanide, which undergoes less dissociation, is a weaker disinfectant in dilutions of four times the strength. The antiseptic power of a solution of mercuric chloride is considerably diminished by the addition of sodium chloride. This is due to the general principle that when to a solution containing free ions similar ions are added there is a tendency to re-form the original molecules. In this case the addition of sodium chloride increases the concentration of free chlorine ions, with the result that mercuric chloride is re-formed, and the number of free mercuric ions, to which the antiseptic action of the salt is due, is diminished. These considerations may be extended to all substances which are dissociated in solution and afford considerable assistance to the prescriber. Thus Professor Maillard points out that the specific action of mercuric chloride cannot be obtained with the various organic compounds of mercury which have been introduced into medicine unless such compounds undergo a series of changes in the human body with the ultimate production of mercuric ions. Hence care should be taken in the treatment of syphilis not to replace injections of mercuric chloride by some complex organic compounds of mercury which, though perhaps painless and more agreeable to employ, have not been proved to be equally efficacious. Professor Maillard shows the value of considering electrolytic dissociation in choosing a vehicle for administering medicines. If the physiological effects of a substance were simply due to its molecular structure it would suffice to dissolve it in any convenient liquid. But in cases where the physiological activity depends upon free ions, care must be taken to dissociate as well as to dissolve the substance. Water, ethyl alcohol, and acetone ionise most electrolytes, but glycerine and acetic acid are indifferent dissociants, while chloroform, ether, and benzene ionise but little or not at all the substances which they dissolve. This explains the fact that a dose of phenol which is toxic and caustic in aqueous solution is neither toxic nor caustic when mixed with an equal volume of

[1] Nov. 1st, 1906, pp. 407-17; Nov. 16th, pp. 450-62.

glycerine; it also explains the slight antiseptic value of solutions of silver nitrate and mercuric chloride in absolute alcohol. Professor Maillard mentions, in passing, that the antiseptic power of aqueous solution of phenol is increased by the addition of sodium chloride. A study of electrolytic dissociation is helpful in avoiding incompatibles. The extent of dissociation of an electrolyte may be diminished by the addition of other electrolytes and of non-electrolytes, especially viscous and colloid bodies. Uric acid affords an interesting instance of the general rule that the lowering of ionisation is most noteworthy in feeble electrolytes. It is only slightly dissociated in solution and its salts are scarcely more so. If a solution of sodium chloride—i.e., an abundance of sodium ions—be added to a solution of sodium acid urate, its dissociation is diminished and molecules of the urate are re-formed and precipitated. The addition of sodium carbonate or bicarbonate also lowers the solubility of the urate. Hence the unexpected conclusion is reached that when sodium bicarbonate is administered to a gouty patient the uric concretions are not dissolved, but that, on the contrary, there is a tendency for urates to be precipitated. The salts of lithium, piperazine, and various other remedies for gout have a similar effect. It would thus appear that the explanation of the efficacy of an alkaline treatment in uric acid diathesis lies elsewhere than in the solution of the uric concretions.

THE ETHICS OF FASTING.

IN some measure the fasting enjoined by the Church during the season of Lent may be defended, at all events in a large number of cases, on physiological as well as on moral grounds. Mere discipline, of course, invariably acts healthily on both body and mind at whatever season of the year it may be practised and no particular religious creed need be followed as the *sine quâ non* of a course of self-denial. The custom of the Church is a very old one and though modern life has rendered the carrying out of fasting on strict lines untenable, yet most intelligent people are prepared to confess an admiration for, and a sympathy with, the general principles of a scheme which has for its object the discipline and well-being of the body and the mind. That being so, the strength of purpose is more likely to receive help when a specific season for carrying out the disciplinary exercise is selected than if the time were chosen in a haphazard way. Lent may therefore be regarded as a convenient season when the individual addicted to various obvious luxuries and excesses can effectually brace his moral strength to forego those things which he knows perfectly well he can do very well, if not better, without. From the Church's point of view there is, of course, a wider and deeper significance attached to what she regards as a holy season, but it is only in our province to consider the subject in its bearing upon the welfare of the body. The season gives the creature of more or less selfish or bad habits an excellent opportunity of relinquishing those habits for at any rate a certain period and he may, and probably will, receive a salutary and moral lesson which may induce him to lead a better and physiologically happier life. He may be poisoning himself, for example, by over-indulgence in tobacco, alcohol, or even food, and he may find that, as a result of his determination to give up these excesses for a season, his mental and bodily activities are improved, his health is altogether better, and so he is constrained to go on with the "godly, righteous, and sober life." It would be difficult, if not impossible, to defend by physiological arguments the excessive fasting of the old ascetics, but fasting from luxury and excess is a procedure absolutely in harmony with a vigorous, healthy, and moral condition. The conduct indicated, therefore, in the Lenten fast of the Church is calculated to lead the erring into the paths of physiological righteousness. Self-denial is, however, a poor thing if it does not benefit others besides ourselves.

THE LADIES' HOME AT CANNES.

THIS institution was established 24 years ago with the object of affording rest and change of scene to British and American ladies of small means who are in enfeebled health or suffering from the effects of overwork and prolonged strain. Patients who are in actual ill-health or invalids requiring constant nursing are not admissible, but those troubled with minor ailments and who can take exercise are eligible. No mental cases are admitted or any of an unfavourable tuberculous character. The home is situated above the town of Cannes in the healthiest surroundings. Each inmate has a private room and there are a common sitting-room and dining room, also a private chapel. The sanitary conditions are of the best. The medical supervision is conducted by two British physicians of Cannes each for three months during the season which extends from Nov. 1st to the end of April, and they give their services gratuitously. There are an experienced lady superintendent and a trained nurse on the staff. Accommodation for 34 ladies is provided. The home does not appear to be as well known or appreciated as it ought to be. It is entirely maintained by subscriptions and donations of the British and American residents and visitors to Cannes. It should only be necessary to make the existence and purposes of this useful home better known to the medical profession in this country to insure an increase in its revenue. There must be not only many fitting candidates ready to secure its advantages but also many persons willing to help in so good a work. The benefits of the home are well recognised by all who are connected with it, providing, as it does, a well-ordered residence in the worst months of our climate in one of the brightest and most favoured spots of the Riviera. The selected inmates pay their own fares out and home and £1 per week for maintenance and there is no limit to their stay during the season. Application should be made to Miss Hankey (Hôtel des Anglais, Cannes, during the winter, and The Palace, Much Hadham, Herts, in the summer), who will furnish all particulars.

YELLOW FEVER IN CUBA AND ITS MEANS OF PROPAGATION.

Dr. A. M. Fernandez Ybarra of New York has on several occasions both spoken and written against the accepted theory that mosquitoes are solely or mainly responsible for the propagation of yellow fever. He has written to us recently on the subject, taking as his text the numerous cases of yellow fever which occurred in Cuba in 1905 and 1906. It appears from statistics quoted by him that the disease was fairly prevalent in certain districts of Cuba during those years, and that a grand total of 89 cases of yellow fever, with 37 deaths (a death-rate of 41·57 per cent.), have occurred in the island since the promulgation of the theory that the female stegomyia fasciata was the sole agent in the propagation of yellow fever. He further points out that these cases arose in the western part of the island, where it is stated that measures for the extermination of the stegomyia fasciata have been carried on continuously since Feb. 15th, 1901, while the eastern part of the island in which the deadly epidemic that occurred during the Spanish-American war took place and where, according to Dr. Ybarra, no vigorous action has been directed against mosquitoes since that time, has been entirely free from the disease. He gives clinical details of nine cases of yellow fever, the history of which is, in his opinion, incompatible with the mosquito theory of transmission. He states that in all these cases except one

the disease developed after six days' exposure to the supposed mosquito infection, the longest recognised period of incubation of yellow fever, and that in several of the cases quoted such infection could not have possibly existed. He asserts that the sanitary authorities of Cuba in their campaign against the disease relied solely upon the prevention of the hatching of mosquitoes and upon such protection of imported cases of yellow fever as would insure that no mosquitoes could become infected from them. General sanitation was neglected and to substantiate this charge he refers to the report of a commission of medical men sent to Cuba by the *New York Herald* to investigate the health conditions of the island. This commission stated that since the Cubans had again come into control of their domestic affairs the sanitary state of the towns especially had become very unsatisfactory. Dr. Ybarra is of opinion that for the eradication of yellow fever cleanliness and sanitation are quite as essential as measures dealing with mosquitoes. Referring to the facts that the American commission of 1900 adopted the mosquito theory of the etiology and propagation of yellow fever and that observations supporting this theory were made independently in Brazil by the French commission, by the English commission from the Liverpool School of Tropical Medicine, and by the German commission from Hamburg, Dr. Ybarra criticises the manner in which the experiments were carried out and thinks that the results obtained by all of these investigators are untrustworthy. His article is not without interest but will hardly modify the opinions of those who have made a study of the subject and have concluded with the several commissions that yellow fever is propagated by mosquitoes.

THE COMPARATIVE EFFICIENCY OF SILVER NITRATE, PROTARGOL, AND ARGYROL.

IN the *Ophthalmoscope* for January is published a comparison of the efficiency of silver nitrate, protargol, and argyrol which has been made in cases of acute muco-purulent conjunctivitis by Dr. T. Harrison Butler at the British Ophthalmic Hospital in Jerusalem.[1] For many years silver nitrate was successfully employed at the hospital in the form of a 2 per cent. solution, without producing irritation or cauterisation of the lids even in infants. Solutions stronger than 3 per cent. had a caustic action. In infants the eye was washed out with boric lotion after the application of the silver nitrate. Protargol and argyrol were freely used in a 33 per cent. solution, the excess being left in the eye. The solutions were applied by means of small pellets of cotton-wool held in catch forceps. Drops for home use were always given, silver nitrate 0·2 per cent. and argyrol and protargol 5 per cent. in strength. Cases were chosen in which the disease was in an early stage and the two eyes were nearly equally affected. One drug was applied to the right eye, another to the left, while the third was given for home use. 42 cases in which protargol and silver nitrate were compared gave the following results. Protargol was superior in 62 per cent. of the cases, silver nitrate in 10 per cent., while in 28 per cent. the results were equal. In 22 cases protargol and argyrol were compared, when protargol proved to be superior in 50 per cent. of the cases, argyrol in 0·45 per cent., an even result being observed in 49·45 per cent. The inferiority of argyrol to protargol was so pronounced that the comparison was not continued, especially owing to the production of great irritation by argyrol in four cases, a symptom never observed by Dr. Butler with silver nitrate or protargol. In 13 cases argyrol was tested against silver nitrate; in seven of them the effects were equal and in the remaining six cases argyrol showed a slight superiority. But in many of the cases in which protargol proved superior to argyrol the difference was very pronounced. During the summer of 1906 Dr. Butler used protargol in several hundred cases of the disease and obtained decidedly better results than had been obtained with silver nitrate in former years. Thus protargol is a more satisfactory agent than either argyrol or silver nitrate in the treatment of acute muco-purulent conjunctivitis, while argyrol is better than silver nitrate. The application of protargol causes much less pain than silver nitrate but more than is produced by argyrol.

[1] Compare THE LANCET, Feb. 16th, 1907, p. 425.

THE STARVATION MEAL OF THE INFANT.

THE number of mothers who purchase machine-skimmed milk for the feeding (*sic*) of their infants is perfectly appalling. We have again and again called attention in our columns to this scandalous state of affairs, but still this traffic of stunting the growth if not annihilating the life of the infant altogether continues. If further evidence were wanting it appears plainly enough in a report recently made at the instigation of the council of the British Dairy Farmers' Association by its consulting chemist. The brands of condensed milk obtained proved to be identical with those purchased by mothers for feeding their babes and in every case the largest sale of condensed milk was for what is known as machine-skimmed, with at least 70 per cent. of the fat abstracted and in one case no less than 90 per cent. There was a comparatively small sale for condensed whole milk. A little calculation showed that the purchasers of these condensed milks actually pay 1*d.* per pint for the skimmed milk which has been condensed. Dairymen would willingly supply, we should think, perfectly fresh skimmed milk at this price and the addition of from 45 to 50 per cent. of sugar would be unnecessary, and indeed its omission would most likely be in favour of the baby's health and vigour. But skimmed milk, whether fresh or condensed (and subsequently diluted), is entirely unsuited for a baby's nourishment and it is scandalous that such a fact is so widely and persistently ignored. We would have all tins of machine-skimmed milk compelled to have marked upon them by the State in bold plain lettering the words, UNSUITABLE FOR THE FEEDING OF INFANTS.

NEGLECT ON THE PART OF A NURSE.

A SERIOUS case of neglect on the part of a monthly nurse came before the coroner's court at Kingston-on-Thames on Jan. 23rd. The deceased, who had had three children and was expecting her fourth child in December last, engaged a monthly nurse named Colson to attend her in her confinement without a medical man. The nurse, in answer to a question from the coroner, admitted that she had no certificate of training and had only spent four and a half months at York-road Lying-in Hospital. She had been acting as a monthly nurse for 21 years and had never given it out that she was qualified nor had she before this occasion taken a case without a medical man. Dr. Pattison Armstrong, resident medical officer at the Kingston workhouse infirmary, stated that deceased was admitted to that institution on Jan. 14th, having, as he understood, been confined a fortnight previously. She was in an extremely dirty condition, her appearance evidencing gross and continued neglect. She was suffering from severe abdominal pains and abscesses, her temperature on admission being 101° F., while she was perspiring profusely. Despite every attention pneumonia supervened on Jan. 17th and she died on the 19th. After making a post-mortem examination he came to the conclusion that death was due primarily to blood poisoning following labour and also to pneumonia and heart failure. The coroner, in summing up, said that a woman

who had attended a hospital for four and a half months should have known how to keep a patient clean. The woman whom he had called before them had contradicted herself over and over again. He himself did not know whether the neglect was wilful or whether it arose through ignorance. Of course, if it was the former it meant manslaughter. Continuing, the coroner said that if he had known how serious the case was he did not think he would have examined the witness Colson at all, but would have advised the jury to return a verdict of manslaughter. As, however, they had extracted certain admissions from her in the witness-box it would not be fair to proceed against her in any other way. The case disclosed a serious state of things and there was no doubt whatever that the deceased had died from blood poisoning brought about by neglect. The jury returned a verdict in accordance with the medical evidence, the foreman adding, "And we think this woman is deserving of censure." The jury subsequently requested the coroner to write a letter to the medical officer of health of Malden and Coombe, calling his attention to the case and pointing out that the deceased had died from puerperal fever from blood poisoning and asking that Mrs. Colson should be prevented from practising for at least three months. Her own evidence showed the so-called nurse to be a very ignorant person who had not the most elementary notions of nursing, and there can be little doubt that the unfortunate patient died from septicæmia due to the nurse's ignorance and neglect. So long as people will intrust their lives to the mercies of such women cases of this kind are likely to occur. As the woman was not a midwife the Midwives Board has, of course, no jurisdiction over her, but we hope that the medical officer of health of the district will now keep an eye upon her and her doings. Unhappily, a long time is likely to elapse before the competition of properly trained women will make it impossible for such dangerous persons as this half-trained nurse to earn a livelihood as monthly nurses. Education is required not only on the part of the nurses but also on that of women themselves in order that the latter may be brought to realise how important it is that they should obtain the services of properly trained and qualified midwives.

CATARRHAL JAUNDICE DUE TO THE TYPHOID BACILLUS IN A PATIENT WHO HAD NOT SUFFERED FROM TYPHOID FEVER

IT has been shown by Chiari, Birch-Hirschfeld, and others that the typhoid bacillus is almost constantly present in the gall-bladder in typhoid fever, often in enormous numbers. In most of the cases the gall-bladder and biliary passages are normal; in some cases catarrh which may manifest itself as jaundice or acute cholecystitis occurs. In certain rare cases these affections have been found to be produced by the typhoid bacillus in the absence of typhoid fever. In the *Archives Générales de Médecine* for January M. G. Etienne and M. G. Thiry have reported the following case. On May 28th, 1906, a man, aged 64 years, who was suffering from tabes and hemiplegia and had been in hospital four years, was noticed to be slightly jaundiced on the face and conjunctivæ. The liver was not enlarged, the gall-bladder was not palpable, and the right hypochondrium was not tender. The urine was brown and contained biliary pigments. The stools were not decolourised. The tongue was slightly furred and the patient had vomited several times that morning. The temperature was normal. On the following day the tint of the conjunctivæ had deepened but the jaundice had not extended. Complete recovery took place in a few days. As the patient in the next bed was also suffering from catarrhal jaundice at the same time as this man the serum reactions of the latter's blood were examined with the surprising result that a marked Widal reaction in a dilution of 1 in 300 was obtained. The man had never suffered from typhoid fever. On June 18th the jaundice recurred and ran a similar course. In August the typhoid bacillus was cultivated from the patient's stools. The serum of the patient in the next bed did not agglutinate the typhoid but agglutinated the paratyphoid bacillus. A number of cases of jaundice, angiocholitis, and cholecystitis due to the typhoid bacillus in the absence of typhoid fever have been recorded by Gilbert and other writers. Gilbert and Lippman have recorded a case of jaundice consecutive to a gastric febrile attack due to the typhoid bacillus. Such a case may be regarded as a connecting link between primary angiocholitis due to the typhoid bacillus and ordinary typhoid fever complicated by angiocholitis. It may be asked, What was the source of the typhoid bacillus in the case reported above? In 1896 Remlinger and Schneider found the typhoid bacillus in the stools of five out of ten soldiers who were under treatment for various diseases—leukæmia, acute tuberculosis without intestinal lesions, dysentery, and (in two cases) chronic malaria. Koch has shown that the typhoid bacillus is not found in the stools of healthy persons living at a distance from the subjects of typhoid fever but that it is frequently found in the intestines of persons who come into contact with typhoid patients, such as medical practitioners, nurses, and other patients. This fact has been confirmed by several writers. In such cases the bacillus appears to have only an ephemeral existence in the alimentary canal but sometimes it is more tenacious and has been found there for as long as 21 months. An interesting fact is that in such cases even when it remains a long time in the alimentary canal the blood does not give Widal's reaction. Cases of typhoid fever were freely admitted into the ward in which the patient whose case is described above had been treated for four years. We may point out that this frequent presence of the typhoid bacillus in the alimentary canal of those who come into contact with typhoid patients throws an interesting light on the rare cases in which typhoid fever is acquired by contagion.

THE INTERNATIONAL SURGICAL SOCIETY.

THE second congress of this society will be held in Brussels, under the patronage of His Majesty Leopold II., King of the Belgians, in September, 1908. Professor Czerny of Heidelberg will preside. It may be remembered that at the first congress, held in Brussels in September, 1905, it was decided to organise an exhibition illustrative of cancer and its treatment for the second congress to be held at the same place in 1908. With the view of securing a systematised method of procedure in the construction of reports relating to specimens some suggestions have been prepared by Dr. Jules Dollinger, professor of clinical surgery in the Royal University of Budapest and president of the International Cancer Museum. Specimens for exhibition will be received by Professor Depage, general secretary of the society, 75, Avenue Louise, Brussels, from Sept. 1st to 8th, 1908. This exhibition is not necessarily confined to members of the society. The congress will be so arranged as to allow exhibitors to make such demonstrations as may appear desirable by the society during the meeting. The International Surgical Society consists of over 600 members and includes 23 national committees coöperating in various parts of the world. By the statutes of the society the number of members is limited. The official languages of the congress are English, French, and German. The subscription is a triennial one only of 40 francs (£1 12*s.* 4*d.*) payable on election, and includes a copy of the transactions of the congress. The members of the society elect in congress the national committees and

other office-bearers. Application for membership should in the first instance be forwarded to the Honorary Secretary of the National Committee (Iles Britanniques) for transmission to the international committee which meets at Brussels. The subjects selected for discussion at the congress in 1908 and the names of the nominated reporters will be announced later. Copies of the statutes of the society and other information may be obtained from the honorary secretary, Mr. Reginald Harrison, 6, Lower Berkeley-street, London, W.

TUBERCULOSIS IN COWS.

OUR Manchester Correspondent writes: An experiment carried out in Shropshire showed that when cows were kept out of doors night and day from October to Christmas they did better than similar cows kept in shippons at night. It is said that breeds like the West Highland and Galloway that spend their lives in the open air are practically free from tuberculosis. This is, of course, what we should expect, and it points the moral pretty clearly that the disease is closely connected with the confinement of cows in shippons of varying degrees of insanitation, more especially in towns, where they are often closely confined for months together. The shorthorns and their crosses supply most of the milk for the towns and are kept in the most artificial conditions and are as a consequence most subject to tuberculosis from living in these close, stuffy shippons. Farmers have very generally had the idea that in cold weather warmth was necessary for the production of milk, while the real requirement is liberal feeding. With this condition fulfilled, with open-air treatment as much as possible, and airy well-ventilated sheds when the cows have to be brought in, there would soon be a considerable diminution of tuberculosis.

EXOPHTHALMOS IN LEUKÆMIA.

IN the *American Journal of the Medical Sciences* for December Dr. James B. Herrick has reported a case of a rare complication of leukæmia—exophthalmos—and called attention to the importance of the whole subject of lymphoid tumours in and around the eye. An Italian labourer, aged 22 years, of good habits and without discoverable hereditary or acquired disease, who was doing hard work on a railroad, had a "cold in his head," fever, tinnitus, pains and aches, and a feeling of general weakness on Dec. 5th, 1904. A few days later swelling of the eyelids and prominence of the eyeballs were noted. On Dec. 22nd he was seen by a medical practitioner who found him pale with slight fever, enlarged spleen, exophthalmos, and 134,000 leucocytes per cubic millimetre. The anæmia progressed and he suffered from dyspnœa, palpitation, and dizziness, and died on Jan. 10th, 1905, only 36 days after the onset of symptoms. Five days before death the red corpuscles numbered 1,052,000 and the hæmoglobin amounted to 20 per cent. The white corpuscles always amounted to more than 100,000. A differential count showed small mononuclears, 97·84 per cent.; large mononuclears, 0·6 per cent.; polymorphonuclear neutrophiles, 1·36 per cent.; mononuclear neutrophiles, 0·16 per cent.; and polymorphonuclear eosinophiles, 0·04 per cent. During 16 days in which he was under Dr. Herrick's observation in hospital his temperature varied between 98° and 101° F. with one rise to 103°. The spleen extended a hand's breadth below the ribs. The cervical, axillary, and inguinal glands were enlarged, some to the size of a small hickory nut. The sternum was tender. A needle puncture of the ear bled for six hours, showing the hæmorrhagic tendency of this form of leukæmia. There were no subcutaneous hæmorrhages but the necropsy showed submucous, subserous, and visceral hæmorrhages. A striking feature was the persistent exophthalmos. No tumours could be felt in the orbit. The fundi showed only pallor. Chloroma was suspected but thickening of the periosteum or pigmentation of the glands or urine could not be detected. The treatment consisted in the administration of strychnine and of arsenic in increasing doses and exposure to the x rays. The necropsy showed hyperplasia of the spleen and lymphatic glands, enlargement of the intestinal lymphatic glands, lymphoid marrow in the femur, leukæmic infiltration of the lungs, the kidneys, the myocardium, and the liver, diffuse bronchitis, atelectatic areas in the lungs, right sero-fibrinous pleurisy, localised adhesive pericarditis, and leukæmic infiltration of the fat of the orbits. Microscopically the changes were characteristic of acute leukæmia—lymphoid infiltration of the affected parts. Up to 1900 seven cases of bilateral exophthalmos in leukæmia had been reported and subsequently several cases have been published. All the cases were of the lymphatic type. Bilateral exophthalmos has also been observed in Hodgkin's disease—evidence in favour of the view that it is related to leukæmia. Chloroma also closely resembles leukæmia. The difference consists in the greenish colour of the tumours, the tendency to periosteal involvement and the formation of temporal masses, and the frequency of exophthalmos in the latter disease. The occasional occurrence of lymphoid masses in the orbits in leukæmia supports the view that the two diseases are identical.

THE UNIFICATION OF OFFICIAL FORMULAS FOR POTENT MEDICAMENTS.

IT is recorded in the *Pharmaceutical Journal* of Jan. 26th that the International Convention for the Unification of Official Formulas for Potent Medicaments has now been signed by representatives of the Governments of Great Britain, Germany, Austria and Hungary, Belgium, Bulgaria, Denmark, Spain, the United States, France, Greece, Italy, the Grand Duchy of Luxembourg, Norway, the Netherlands, Russia, Servia, Sweden, and Switzerland. Portugal alone has held aloof from the agreement. The first article of the agreement prescribes the Latin titles, and in many cases the mode of preparation, of certain drugs and galenicals to be made official in future editions of the Pharmacopœias of the respective countries. It is agreed that no potent medicament shall be presented in the form of a wine, that tinctures of potent drugs shall be of 10 per cent. strength, and fluid extracts shall be of 100 per cent. strength. It is further agreed that the normal drop-measure to be officially recognised shall have an external diameter of exactly three millimetres and shall give, at 15° C. with distilled water, 20 drops per gramme. The British Government, in signing the Convention, has reserved the right: (1) to make from time to time such modifications in points of detail as the progress of medical and pharmaceutical science may render necessary; and (2) to observe or repudiate the agreement as may be thought desirable for any of the British colonies and possessions. The alterations in the respective Pharmacopœias are to be made in the next editions published, or in supplements.

INDUSTRIAL POISONING AND FATAL ACCIDENTS IN FACTORIES AND WORKSHOPS.

THE Home Office has published the cases of industrial poisoning and fatal accidents which occurred during 1906 in tabular form and in advance of the annual report of the chief inspector of factories which is usually issued later in the year. It is thought that this procedure will be of advantage and it has been decided for the future, following a practice already adopted in regard to mining accidents, to issue these preliminary returns in anticipation of the chief inspector's report in which they will eventually be embodied. The tables show (*a*) the number of cases of industrial poisoning, whether ending fatally or not, and (*b*) the number of

industrial accidents ending fatally which were reported to the Factory Department during 1906 in pursuance of the provisions of the Factory and Workshops Act, 1901. The total number of fatal accidents in the United Kingdom in 1905 was 1063 and in 1906 1116. Of these the construction of buildings contributed 145 (all males) in 1906, against 117 in 1905; the docks 143 (all males) in 1906, against 142 in 1905; locomotives 112 (all males), against 109; foundries 118 (one female), against 125; and ship-building 110 (all males), against 108 in the previous year. The total number of fatal accidents comprised 1098 males and 18 females. In regard to industrial poisoning, lead working was responsible for 632 attacks in 1906, against 592 in 1905; mercury for four cases in 1906, against eight in 1905; arsenic for five cases in 1906, against one case in 1905; and anthrax for 66 cases in 1906, against 59 in the previous year. There were altogether 707 cases reported of industrial poisoning in 1906, while in 1905 the total number was 663.

ON Saturday, March 2nd, a sessional meeting of the Royal Sanitary Institute will be held at the Parkes Museum, when a discussion will take place on the Bacterial Treatment of Sewage, with special reference to the Biolysis of Organic Nitrogen, to be opened by Mr. W. D. Scott-Moncrieff. The chair will be taken at 11 A.M. by Dr. J. Lane Notter, chairman of the council of the institute. At 1 P.M. there will be an adjournment for luncheon. In the afternoon a visit will be made to the Staines sewage outfall works at Ashford. The train will leave Waterloo Station for Ashford at 2.10 P.M. Those wishing to attend the inspection and requiring accommodation in the brakes from Ashford to the works should notify the secretary of the institute not later than Feb. 26th.

A BILL "to make further provision with respect to the manufacture, importation, and sale of butter and margarine and similar substances" has been presented by Sir Edward Strachey and was ordered by the House of Commons to be printed on Feb. 14th. The clauses *inter alia* relate to the inspection of factories, limits of moisture, regulations as to curd, the sale of butter mixtures, imitation butters, and penalties for offences. We shall deal with this matter in a future number.

ON Feb. 14th a meeting of the Russian Physico-Chemical Society was held at the University of St. Petersburg to consider the perpetuation of the memory of the late deceased Professors Mendeléeff and Menschutkin, the latter having been president of the society. The *Novoe Vremya* announces that biographies of both distinguished men will be prepared and that a fund open to contributions from the whole world will be raised with the object of erecting a monument to Professor Mendeléeff in front of the University building.

Sir William Hingston, whose death is announced as having occurred at Ottawa on Tuesday, Feb. 19th, was one of the best known public men in Canada. He was a distinguished surgeon, an ex-mayor of Montreal, and a Senator of the Dominion.

THE annual general meeting of the Association of Certificated Dispensers will be held in the Apothecaries' Hall, London, on Thursday, Feb. 28th, at 7.30 P.M., when an address will be delivered by Dr. F. S. Toogood.

A LECTURE will be delivered at the Royal Sanitary Institute, Parkes Museum, by Professor Ronald Ross, F.R.S., on "Points of Interest Connected with Tropical Sanitation," on Friday, March 1st, at 5.30 P.M.

THE death is announced at Maidstone last week of Dr. James Edmund Huxley, the brother of Professor Huxley. Dr. Huxley was formerly superintendent of the Kent County Lunatic Asylum and was 87 years of age.

Dr. A. J. Rice Oxley has been appointed a Physician-in-Ordinary to Her Royal Highness Princess Henry of Battenberg.

THE OBSTETRICAL SOCIETY OF LONDON AND ITS EXAMINATIONS FOR MIDWIVES:

A CHAPTER IN THE HISTORY OF THE MIDWIVES QUESTION.

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"SEVERAL young physicians in my department of practice have been endeavouring to start an obstetrical society—Dr. Tyler Smith, Dr. Grailly Hewitt, Dr. Priestley, &c. ..... They have requested me to become President and this evening our first meeting took place at the Freemasons' Tavern to pass a series of resolutions and inaugurate the society." So writes in his diary[1] Dr. Edward Rigby (the second) under date Dec. 16th, 1858. He goes on to speak of what happened at the meeting and to express his private opinion of one or two of the speakers as well as of Sir Henry Halford and the Royal College of Physicians of London, but for whose illiberal opposition, he says, there would have been an Obstetrical Society of London long before. My object, however, in this paper is not to relate the history of the Obstetrical Society, but, now that the passing of the Midwives Act has rendered it unnecessary for the society to continue its voluntary examinations, to trace, in somewhat greater detail than has hitherto been attempted,[2] the various occurrences that led the society to become actively interested in the midwives question and to place on record the manner in which that interest has from time to time been manifested. Having therefore glanced for a moment at the circumstances attending the society's birth, and introduced to my readers its founders and first president, I pass on to my more immediate task.

It is a matter of common knowledge that the institution by the Obstetrical Society of London of a voluntary examination of midwives was indirectly due to a suggestion made by the late Dr. W. Farr, superintendent of the statistical department in the office of the Registrar-General, but I am not aware that Dr. Farr's letter containing this fruitful suggestion has ever been published. As it has become of some historic interest I give it here in full. It is addressed to the then President of the society, Dr. Robert Barnes, and is as follows:—

General Register Office, Somerset House,
December 20th, 1866.

MY DEAR DR. BARNES,—I wrote a paper on the mortality of children (in the States of Europe) under 5 years of age for the London Statistical Society, and got some good information about the management of children from Austria, France, &c. In Italy they have appointed a committee to report on the subject.

Now I want your Society to undertake to give us an account of the treatment of children in London and the several parts of England; and, if it would kindly consent to do so, we should be sure that it would be done well. I enclose a list of queries which were answered for Scotland by Dr. Starkie (?).

The treatment of children differs of course in the manufacturing districts where the women are employed in mills from the treatment in agricultural parishes and in country towns. But besides this, there are local differences in the North and South—in Norfolk and in Wales, for example.

This subject is of great importance, and it appears to be the first step towards determining the causes of the great differences in the mortality of children.

If you will kindly undertake to bring the matter before the Council of the Obstetrical Society, and also inform me of their decision, I shall feel greatly obliged. I am, my dear Dr. Barnes,

Your very faithful servant,
W. FARR.

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[1] This diary has never been published. I was kindly allowed to see it some little time ago by its present possessor, a member of Dr. Rigby's family, who very courteously gave me leave to make a few extracts from it.

[2] Summaries of the various practical steps taken by the Society to further the better training and education of midwives have been drawn up from time to time and published. See for example vol. xxxiii. of the Transactions for 1891, p. 59; Dr. F. H. Champneys's inaugural address as president of the society (see Transactions of the Obstetrical Society of London, vol. xxxvii. for 1895, pp. 94 et seq.); an unsigned article in "Nursing Notes," February, 1900, p. 22 (afterwards reprinted); and a pamphlet by Dr. Amand Routh, dated April, 1902.

The connexion between this letter and the institution of an examination for midwives may not at first sight seem very obvious. It will be my business in what follows to show how the one gradually led to the other. The letter was read at a council meeting on Jan. 2nd, 1867, and Dr. Barnes, in referring to it in his presidential address at the annual meeting of the society held the same evening, expressed his gratification that the aid of the society had been "sought in a work of such great national and human interest," and announced that the council had resolved to undertake the proposed investigation.[3] Accordingly, when the new council met in February a committee was appointed, consisting of the President (Dr. J. Hall Davis), Dr. Tyler Smith, Dr. Barnes, Dr. Grailly Hewitt, Mr. Curgenven, and the honorary secretaries (Dr. Murray and Dr. Gervis), to carry out Dr. Farr's suggestion. The committee was not able to set to work at once, but eventually a series of questions was drawn up and printed and a copy sent to every Fellow of the society. A large number of answers was received and on June 2nd, 1869, the committee presented to the society a first instalment of its report, consisting of an analysis of the various replies that had been sent in prepared by one of the honorary secretaries, Dr. Gervis. This analysis[4] was read by Dr. Gervis in the presence of Dr. Farr, who expressed himself as being gratified at the result of his suggestion and thanked the society for this valuable "contribution to the natural history of the British baby."[5]

On July 18th of the following year (1870) Mr. Curgenven was commissioned to draw up a report on the changes in the law which appeared to be necessary in order to obtain greater security for infantile life, and on Nov. 7th the President (Dr. Grailly Hewitt), Dr. Gervis, Dr. Braxton Hicks, Dr. Playfair, and Mr. Curgenven met and discussed Mr. Curgenven's suggestions, and, with some alterations, approved and adopted them. These recommendations[6] were subsequently adopted by the council and it was resolved that they should be acted upon as the council might decide. Meantime another committee—consisting of Dr. Tyler Smith, Dr. Playfair, and Mr. Gaskoin—had been appointed on Oct. 19th (of the same year) to consider whether at the present time any steps should be taken for the promotion of obstetric education having in view the interests of the public and of those interested in obstetric medicine. In the report of this committee, which was also adopted by the council, there occurs the following passage :—

> The committee are also of opinion that there is at present an urgent need of some examination by which the knowledge of women practising as midwives should be tested, so that those patients who do not employ qualified practitioners should have some means of protecting themselves against the gross ignorance so common amongst women who take upon themselves to practise midwifery. The committee therefore further recommend that a supplementary examining board should be formed for the voluntary examination of women preparing to practise as midwives, and for the granting of certificates of proficiency to such as are found sufficiently qualified, and they believe it would be a noble object for the Obstetrical Society to endeavour to obtain eventually a legislative enactment preventing any woman from practising midwifery who has not submitted herself to some such examination.

With a view to giving practical effect to this suggestion a committee, consisting of Dr. Grailly Hewitt (President), Dr. Barnes, Dr. Gervis, Dr. Hicks, Dr. Playfair, Dr. Tyler Smith, and Mr. Gaskoin, was appointed to submit a draft scheme. On Dec. 7th, 1870, the Infantile Mortality Committee (to which Dr. Meadows and Dr. Playfair had now been added) presented to the society its concluding report. This report had, like the previous one, been drawn up by Dr. Gervis. Before the report was read the President, Dr. Grailly Hewitt, made a few introductory observations, in the course of which, after announcing that a series of "Rules for the General Management of Infants," drawn up by Dr. Playfair, had been approved by the council and printed for general circulation, he spoke of another and somewhat cognate subject that had "attracted the attention of the committee—viz., the desirability of urging on the legislature the necessity for various emendations in the laws relating to infanticide and the regulation and registration of the practice of midwives." He went on to say that Mr. Curgenven, a member of the committee, had given special attention to this matter and would presently lay before the society the results of the committee's deliberations upon it. It would now rest with the society to move further in the matter and to press these subjects on the serious attention of the governing bodies of this country.

Accordingly, after the final report of the Infantile Mortality Committee had been read, the following "Suggestions for Legislative Enactments" were submitted to the meeting, the committee expressing itself as being "strongly impressed with the necessity of urging upon the Government some amendments to the existing laws and the enacting of other measures for the better protection of infant life." The "Suggestions" are arranged under several headings—as, e.g., (1) infanticide, punishment and evidence, amendments; (2) registration of still-births; (3) education of midwives; (4) boarding out of workhouse children; and (5) registration of nurses (baby farmers). The suggestions under No. 3 (education of midwives) were as follows :—

> That no person should be allowed to perform the duties of a midwife or accoucheur unless he or she shall have received proper instruction and shall have given evidence before a competent examining board of possessing knowledge and experience adequate to attendance on cases of natural labour. That an examining board be forthwith appointed for the purpose of testing the knowledge of midwives and for the purpose of issuing certificates of competency.[7]

At the annual meeting of the society, held on Jan. 3rd, 1872, with Dr. Braxton Hicks, the President, in the chair, the Council in a report to the society recommended a detailed scheme which had been prepared during the previous year by a special committee for carrying into effect the resolutions agreed to in December, 1870. The scheme was presented to the society in the form of new by-laws,[8] which after some discussion were put to the meeting (at which there were present 60 Fellows, including the President) and passed unanimously. In moving the adoption of this addition to the by-laws Dr. Grailly Hewitt explained that the practical effect of the resolution would be to institute forthwith an examination for midwives. The plan submitted was the result of "continuous and matured consideration of the matter by the council." It involved the appointment of an examining board, composed of six Fellows of the society, "the examination to be held quarterly and to consist of a practical testing of the competency of the candidates to practise as midwives and of the possession on their parts of such an amount of knowledge as would enable them to recognise the presence of difficulties and the necessity for at once procuring competent professional aid for their patients. ..... That a formal guarantee of the efficiency of practising midwives was urgently required no one could doubt. This examination would supply that. It might be said possibly that the institution of such an examination was the duty of the Government or of the Royal College of Physicians or Surgeons, or the Society of Apothecaries. He was afraid that little was to be expected from Government action at present, though ultimately it might be hoped that this action of the society would result in legislation on the subject. Nor was it to be expected from the general governing medical bodies. In fact, what was everyone's business was the business of no one; and, under these circumstances, this society had stepped forward to initiate what was, he believed, universally admitted to be a laudable object, one indeed of pressing necessity."

The first examination under this scheme was held in 1872, the number of candidates, as will be seen from the table in Appendix V. at the end of this paper, being at first very small and showing no decided increase until after the first nine years. The first board for the examination of midwives consisted of Dr. J. Hall Davis (chairman),[9] Dr. James H. Aveling, Dr. Alfred Meadows, and Dr. Leonard William Sedgwick, with the two honorary secretaries (Dr. W. S. Playfair and Dr. John Jones Phillips) *ex-officio*.

On Nov. 21st, 1873, the President of the society, Dr. E. J. Tilt, the honorary secretaries (Dr. J. Jones Phillips and Dr. James H. Aveling), and several Fellows attended as a deputation to lay before the Right Hon. James Stansfeld, M.P., President of the Local Government Board, their views with regard to the instruction and licensing, registration, and supervision of

[3] Transactions of the Obstetrical Society of London, vol. ix., for 1867, pp. 24, 25.

[4] See Appendix I. (*a*).

[5] Transactions of the Obstetrical Society of London, vol. xi. for 1869, pp. 132-149.

[6] See later.

[7] Transactions of the Obstetrical Society of London, vol. xii. for 1870, pp. 388 to 403.

[8] See Appendix II.

[9] Subsequent chairmen were Dr. Alfred Meadows (1875-77), Dr. J. H. Aveling (1878-1883), Dr. (now Sir) John Williams (1884-86), Dr. J. Watt Black (1887-1890), Dr. F. H. Champneys (1891-94), Dr. C. J. Cullingworth (1895-96), Dr. Percy Boulton (1897-1900), Dr. W. R. Dakin (1901-04), and Dr. John Phillips (1905).

midwives. In explaining the object of the deputation Dr. Tilt said that he need not go into any lengthy statement as to the present condition of midwives in this country, as this had already been done by Mr. Ernest Hart, who recently attended with a deputation on the same subject and with similar objects from the Parliamentary Bills committee of the British Medical Association. He urged, however, that even from the point of view of national economy it would entail a smaller expense to the country to set the instruction and licensing of midwives on a reasonable footing than that which was being constantly incurred as a result of the large amount of preventable disease amongst parturient women of the labouring class caused by the incompetence of the women who habitually attend them. He informed Mr. Stansfeld that the Royal College of Surgeons of England, although recognising the importance of licensing midwives, and although permitted by its charter to undertake this duty if it chose, had recently determined, after careful consideration, to have nothing to do with it. He pointed out that the General Medical Council had, by a considerable majority, expressed its opinion that the midwives question demands serious investigation and had re-appointed a committee to report further upon the education, examination, and registration of midwives. In regard to the position of the Obstetrical Society in this matter, he described what had been done in the way of instituting quarterly examinations and gave a sketch of the circumstances which had led to this step being taken. "The candidates for our diploma," he said, "have not been numerous, but it is not difficult to understand why such is the case. It is clearly because our diploma has no legal value—no more value, indeed, than any certificate which any one of us may give in our individual capacity. I have told you what the society has done to remedy the evils it has discovered and 'suggestions' are now submitted to you which if carried out would, we believe, effect the object we desire. We do not think our scheme perfect. All that we want is to impress upon the Government that something should be done. We do not care whether we are made use of or not; we are ready to be made instrumental in effecting any good if any good can be done through us." On being reminded by Mr. Stansfeld that, departmentally, it rested not with the Local Government Board but with the Privy Council to deal with this subject, Dr. Tilt said that the deputation quite understood the position but had come to Mr. Stansfeld knowing the influence he could bring to bear upon the Privy Council. Dr. Aveling next addressed Mr. Stansfeld with reference to the "suggestions" of the Council of the Obstetrical Society,[10] a copy of which had been forwarded to him a few days previously. An extremely interesting conversation in reference to these "suggestions" took place between Mr. Stansfeld and the members of the deputation—which will be found reported verbatim in the *Obstetrical Journal of Great Britain and Ireland*, Vol I., 1873-74, pp 617 *et seq.* To this excellent report of the proceedings I am indebted for the preceding account and for the following brief references to some points that arose in the course of the discussion.

It has been stated, and repeated over and over again (by myself, I must confess, amongst others) that the estimate of 10,000 as being the approximate number of practising midwives in England and Wales, before the passing of the Midwives Act, was given on the authority of Mr. Stansfeld. It appears from the report of this interview that Dr. Aveling is responsible for these figures and not Mr. Stansfeld. "I have calculated," said Dr. Aveling, "that the number (of midwives) required in England and Wales would be at least 10,000." With regard to registration, Dr. Aveling said it had been proposed that the General Medical Council might issue a sub-register in which the names of midwives might appear. The system of supervision suggested by the Council of the Obstetrical Society was certainly economical and he thought efficient. He quoted the example of Prussia, in which inspectors "are employed to go round and visit the midwives periodically. It is their duty to examine the diaries of the midwives and to abstract from them statistics which are of the greatest value. They investigate cases in which death has taken place during labour and hear any complaints which may be made." On Mr. Stansfeld inquiring whether he might take this as an indication of what the deputation would like to see adopted in this country, Dr. Tilt replied in effect "No," and added that they would rather advise "an approximation to the system adopted by the Government of France where the midwives are kept to certain strict regulations, such as that they should confine themselves to natural labours, and whenever the case requires it that they should call in a skilled obstetrician. Also that they should not use instruments, being liable to a fine of 100 francs for the first offence and double for the next."

Dr. Aveling had already asked Mr. Stansfeld to observe that the deputation looked upon the midwife "more as a midwifery nurse than as a medical woman," and Mr. Stansfeld now, after discussing what had been said as to the machinery to be employed in examining and licensing midwives, went on to deal with the training and instruction of women. "You desire," he said, "women to be midwifery nurses and not medical women. I do not see why you should confine the women to that position. ..... I do not see why you should place a restriction [upon a woman] if she has the power of rising higher." This evidently alarmed some of the less advanced members of the deputation, for one of them here intervened to set Mr. Stansfeld right. "We think," he said, "that women should pass through a complete curriculum of medical education before they are allowed to treat diseases. We are quite willing that they should treat [patients] medically and use instruments if they have first gone through a proper course of training such as is demanded of medical men." "But that question," replied Mr. Stansfeld, "has not been raised; they do not use instruments, ... I do not see why it should be said that a woman should, unless she is to know the whole profession of medicine, know so much and no more. ..... I suppose in a great majority of cases nature will do its work, and if assistance is required which a woman cannot give it is even then a special kind of assistance, in that it is assisting a natural action. I fail to see that it is impossible to accept the idea that a man or woman cannot become skilled in midwifery without having a complete medical knowledge. I do not say that midwives would be sufficient in all cases. I can quite understand that there might be certain extremely dangerous cases in which it would be folly not to call in the best advice and skill but I do not see why you should say absolutely that a midwife unless she had received a medical education should be no more than a midwifery nurse. I should not be satisfied with any scheme that was not elastic and which did not give to women who had means and energy and a desire to acquire higher knowledge and skill a position something above that of a mere midwifery nurse." A member of the deputation here suggested that perhaps Dr. Aveling's phrase "midwifery nurse" had been unfortunate. "I do not say that," replied Mr. Stansfeld, "..... I desire to see your rules elastic. I do not want to say to any woman, 'You shall be a midwifery nurse, but you shall not be permitted to learn more unless you pass through a whole medical curriculum.' ..... I always like to avoid unnecessarily restrictive rules. I like to trust to natural results." Mr. Stansfeld concluded his remarks by promising to forward the views of the deputation to the Lord President of Council (Lord Aberdare) and to discuss them with him. "But do not consider me your spokesman," he added. "You should yourselves forward your suggestions to the Privy Council. ..... I shall be able to say to Lord Aberdare that I take great interest in the matter and that I believe some scheme to be necessary." So ended an interview memorable in this—that the Minister not only understood and was interested in the subject but was so extremely sympathetic as to be prepared to go even greater lengths than the deputation itself in his efforts to give practical effect to the views they had come to place before him.

In discussing the midwives question on the occasion I have just been describing Mr. Stansfeld suggested that besides the midwives wanted by the labouring classes there should be another class, better instructed, who should be allowed to attend to unnatural labours without having received a complete medical education. Dr. Tilt referred to this proposal when he spoke in his next annual address of the deputation to Mr. Stansfeld and said that in his opinion the State would be going beyond its duty if it did more than provide for the poor midwives qualified to attend natural labour. "It will not be so very easy," he continued, "to find funds for the maintenance and the tuition of midwife pupils for a year so that the poor may have midwives not too proud to live in villages and in back slums nor beneath taking 5*s.* as a usual fee for a midwifery case, but to ask Government to provide for the board and tuition of women for three or four years, so as to manufacture

[10] See Appendix III.

a superior kind of midwife, would be asking Parliament to found a medical college for women, which it would never do." In the same address of Dr. Tilt there occurs the following passage, which although written in 1874, is not without interest in the year 1907: "During the last few years a very small group of noisy women have been declaiming and writing about the rights of women. It will neither be for the good of society nor for the happiness of women that they should assume our habits, occupations and anxieties, in addition to their own which they cannot possibly throw off; but at all events one would have thought that the first use these energetic women would have made of their newly acquired eloquence would have been to claim for thousands of English women of the speechless poorer classes the first right of woman in all civilised countries, the right of being safely delivered of their children. Here was indeed a woman's question, a theme suggestive of eloquence, pregnant with pathos; but no, they leave it to us to plead for their sisters, and spend their time in clamouring for the right of voting ....." It remained true to the end that those women who were the most strenuous advocates of women's rights were singularly apathetic in regard to legislation for midwives. With one or two exceptions the medical women also held aloof in a very remarkable manner, the women who really took an interest in the subject and worked at it for years with an amazing perseverance being a group, not of medical women, but of educated midwives.

Although not strictly within the scope of this paper, I cannot resist the temptation to allude to another deputation that waited upon Mr. Stansfeld very shortly after the one of which I have been speaking. On Dec. 8th, 1873, a small body of women (amongst whom were Miss Firth, who introduced the deputation, Miss Fenwick Millar, and Mrs. Noel Thatcher) attended at Gwydyr House to lay before Mr. Stansfeld a memorial from the Obstetrical Association of Accouchers (*sic*) and the midwives of London who were not members of that association. This memorial stated, *inter alia*, that the council of the Obstetrical Association of Midwives (*sic*), feeling that a legal status for midwives was desirable and requisite, had, on Dec. 20th, 1872, addressed a letter to the Royal College of Surgeons of England asking it to grant an examination in midwifery and a licence or certificate to midwives, and that the Council of the Royal College of Surgeons had refused to do this, stating that it had no intention of altering its present regulations. But the principal object of the memorialists obviously was to call attention to what they considered objectionable features in the suggestions laid down by the recent deputation from the council of the Obstetrical Society of London. These were: first, that the attendance of a midwife should be limited to natural labour; secondly, that midwives are not to treat obstetric emergencies; thirdly, that the present corporate bodies are not to be expected to undertake the examination of midwives; fourthly, that the Obstetrical Society of London has instituted an examining board for midwives and is willing to undertake their examination, licensing, and registration; and fifthly, that the midwives require supervision lest they should neglect or exceed their duty.

The objections to these proposals were set forth at some length. The memorialists considered the limiting of a midwife's practice to natural labour an evil, "inasmuch as the obligatory sending for a medical man lessens her sense of responsibility, while it offends her and lowers her status in the eyes of her patients." A properly trained midwife would be competent to undertake the management of obstetric emergencies and would be "capable of recognising any condition requiring medical aid." They did not think that men had "any right to say to a woman able and willing to assist her sex to the utmost, 'thus far shall you go but no further.' If a patient preferred a midwife to attend her, that patient had a right to expect her attendant to be competent to deal with any obstetric emergency that might arise." They considered that the Obstetrical Society of London, being a private and not a corporate body, had no legal right to institute an examining board, and that inasmuch as the founder of the society had definitely expressed the opinion that "it should be the steady aim of every one in obstetric practice to discourage—the time perhaps having scarcely arrived when they could abolish—midwife practice," and as the Obstetrical Society's policy had been and was founded on that advice, it would be impossible to devise a more unfair board—"a body," they exclaim, "of avowed enemies sworn to our destruction, pretending to cherish and foster us." As to the necessity for supervision, midwives as a class were not in the habit of either neglecting or exceeding their duty. Supervision was no more needed by them than by medical men. Regulations embodying the idea that men and women must be dealt with under different codes of moral law were false and ought not to be encouraged or permitted.

Mr. Stansfeld said that he had not observed in the speeches made to him by the deputation from the Obstetrical Society any trace of antagonism to the position the women desired to take, however much their detailed rules might seem to support such a charge. He understood the present deputation to want facilities to be afforded for the education, training, certification, and registration of women ready to perform all the functions of midwifery, and he did not see why they should be refused these facilities by the legislature. With regard to the Obstetrical Society's undertaking the duties of examining and certifying midwives, although it was willing to do it, it was equally willing that the work should be undertaken by the Royal College of Surgeons or any other body, and he for his part thought it would be preferable for one of the licensing or degree-giving bodies to undertake these duties. He had not yet satisfied his own mind as to what would be the best scheme, but he thought there should be elasticity in any scheme adopted so as to admit the practice of women who were ready to fulfil all the functions of midwifery.[11]

I have related this episode at perhaps disproportionate length because it is not often that such definite expression is given to the views set forth by these memorialists. It has been too often forgotten in the course of the many bitter controversies which the midwives question has provoked during recent years that there is a midwives' point of view as well as a doctor's, and that although the primary object of midwives legislation is to benefit the labouring classes no legislation can be satisfactory or successful which is unfair either to the medical profession or to the midwives. The medical profession has been heard on the subject—shall I say?—*ad nauseam*; the midwives are heard but seldom. When they *do* speak they should have a patient hearing.

In his annual address at the Obstetrical Society of London, delivered on Jan. 6th, 1875, Dr. Tilt, the retiring president, after reminding his hearers "that the lower classes of society were at the mercy of uneducated midwives," wholly "uncontrolled," except by "the fear of a coroner's inquest," went on to allude to the prospects of legislation. "Last year," he says, "Lord Aberdare and Mr. Stansfeld were in office; they favourably entertained the views repeatedly brought forward by the society and they were prepared to bring in a Bill for the better education and registration of midwives when a change of Ministry convinced your council that the question must be left in abeyance. ..... It will be for the new council to decide whether it is not time to re-open the question with the present Ministers."[12] It appears that the new council did consider this matter and that it decided to take action, for on March 9th, 1876, a deputation on the training of midwives, comprising representatives of the Obstetrical Society of London, of the Social Science Association, of the Infant Life Protection Society, and of the Parliamentary Bills Committee of the British Medical Association, was received by the Duke of Richmond, Lord President of the Privy Council, and Mr. Sclater Booth, President of the Local Government Board. The deputation included Dr. Arthur Farre, Dr. (afterwards Sir) William Priestley, Dr. Aveling, Mr. Ernest Hart, Dr. Grailly Hewitt, Dr. Tilt, Dr. Braxton Hicks, Dr. (now Sir) Constantine Holman, Mr. Heckstall Smith (St. Mary Cray), Dr. Grigg, Dr. Wiltshire, Dr. Edis, Dr. (now Sir) John Williams, Mr. Francis Fowke, Mr. Curgenven, the Rev. Oscar Thorpe, Dr. J. B. Potter, and many others. With the Lord President were Lord Sandon (afterwards the Earl of Harrowby), vice-president of, and Mr. (afterwards Sir) John Simon, medical officer to, the Privy Council. The deputation was introduced by the Right Hon. Lyon Playfair, M.P. (afterwards Lord Playfair), Sir Trevor Lawrence, Bart., M.P., and Mr. James Lewis, M.P. The President of the Obstetrical Society of London (Dr. Priestley) explained the object of the deputation—viz., to obtain skilled attendance for the poor during their confinements, and concluded by

[11] See Obstetrical Journal of Great Britain and Ireland, vol. i., 1873–74, pp. 689–696.

[12] Transactions of the Obstetrical Society of London, vol. xvii., for 1875, p. 33.

directing the attention of the Lord President to some suggestions which had been drawn up by the council of the society.[13] Mr. Ernest Hart and Mr. Curgenven supported the objects of the deputation. The Duke of Richmond spoke of the influential character of the deputation and said that he fully recognised the unselfish objects of the Obstetrical Society of London and of the other bodies represented. He was disposed to regard the matter as of great importance and the proposed methods he considered reasonable. The subject, however, was a difficult one and he could only promise to do his best to treat it satisfactorily.[14]

In February, 1877, Dr. Charles West, in his inaugural address as the new President of the Obstetrical Society of London, lamented the small number of candidates presenting themselves for the society's examination (only some five or six annually), and advised the society "either to renounce a futile endeavour or else to take steps to bring that endeavour to a real fulfilment," by preparing and submitting to the authorities a "carefully digested plan," as the society neither could "nor ought to expect to gain anything by asking them to do a something without knowing rightly what."

In May, 1877, a deputation from the council of the society again waited upon the Lord President of the Council who expressed himself as favourable to the principles embodied in the amended scheme submitted to him. This scheme was afterwards laid before the General Medical Council, which also approved of its object. In alluding in his presidential address to what had been done during the year 1877 in the direction of urging upon the Government the necessity for legislation Dr. West made graceful reference to the unwearied zeal of Dr. Aveling, "without which our progress towards this most desirable end would have been very small." The President went on to express a conviction that has not by any means lost its practical interest and significance—viz., that it would not be "desirable to substitute for the proposed plan of various examining boards and various registration districts throughout the country any scheme which would imply the formation of one central board for examination and registration under the control of the Local Government Board." He concluded his remarks on the midwives question on that occasion by expressing the hope "that all the Fellows of the society" would "persevere in the endeavour—which concerns us, not as doctors, but simply as citizens striving to supply a great social want—to secure some guarantee that the poor shall not continue to be exposed to an ignorance and unskilfulness against which the Government of every other civilised country has protected them."

In the year 1878 the Duke of Richmond embodied (in a permissive form) the principles of the scheme, submitted to him by the council of this society, in the Medical Acts Amendment Bill. The portion, however, relating to midwives was subsequently dropped out of the Bill, and the Bill itself, owing to the troubles arising out of the Russo-Turkish war, had eventually to be abandoned.

"Medical legislation," said Dr. West in 1879, "is at the best beset by so many difficulties, requires the conciliation of so many conflicting interests, and, unfortunately, gives an opportunity for people to indulge so many crotchets, that it has seemed to some of us it might be desirable to detach this simple practical matter from the wider question and to endeavour to get a Midwives Bill introduced separately into one or other of the Houses of Parliament." As a matter of fact, the separation of the one question from the other had not the result Dr. West seems to have anticipated, for more than 20 years elapsed before any Midwives Bill became law, the event proving that the difficulties to which Dr. West alluded as besetting medical legislation beset midwives' legislation in at least an equal degree.

At the annual meeting of the society held on Feb. 4th, 1880, the Board for the Examination of Midwives, for the first time since its formation in 1872, presented a report. This report, which was signed by the chairman (Dr. Aveling), stated that in the eight years during which the board had been in existence 54 candidates had presented themselves for examination. Of this number 47 had satisfied the examiners and seven had been rejected. During 1879 13 candidates had come up for examination, a number much above the average. The candidates had for the most part been well-educated women. It had been exceptional to meet with one from the working classes, which the board considered unfortunate, as that was the class of woman which it was most necessary to reach. The board concluded its report by expressing its opinion "that the tentative action of the society, in providing a public test for skilled midwives" had "been useful only to a very limited extent; and that nothing short of legislative measures can insure the instruction of the hundreds of women who practise midwifery in this country." The board considered it "most desirable that the council should not relax in the laudable exertions which it has during the last few years been making to induce the Government to recognise the importance of ameliorating the present condition of midwives and providing for the safety of poor women in childbirth." A Bill devoted entirely to this subject and not connected with any scheme for medical reform would, "in the opinion of the board," have the best chance of being dealt with by Parliament. In commenting upon this report the President, Dr. W. S. Playfair, in his address delivered on the same occasion said that "in founding an examination the society had no intention of assuming to itself legislative functions, but it hoped that its action might direct public attention to this question and that the legislature might eventually take the matter in hand. "There is good ground for believing," he continued, "that a Bill on this subject will ere long be submitted to Parliament, and in that case our scheme of examination will be useful in indicating the lines on which such a measure should be based. Early in the year," he said, "I had the honour of heading a deputation to the Lord President of the Council[15] urging the necessity of this on the Government, which was courteously and favourably received. The Government had already taken this matter into consideration in their Medical Bill, in which there was provision for the formation of a register of midwives." This provision "was, however, simply permissive and would," the President thought, "have been practically useless." "When," said he, "the question is settled our Board of Examiners will, I am sure, gladly perform the operation of the 'happy despatch' and cease their functions."

So far as I have been able to find out, the occasion mentioned by Dr. Playfair was the last on which a deputation to Government[16] went up from the Obstetrical Society of London. Other deputations on the subject continued to be received from time to time by the Lord President of the Council and other members of the Government for the time being, but any Fellows of the Obstetrical Society of London who formed part of these deputations attended in their individual capacity and not as representing the society. I have no reason for supposing that this arose from any change of opinion on the part of the society or of its council. It was probably due to a feeling which found forcible expression in the inaugural address of Dr. Playfair's successor in the presidential chair, Dr. Matthews Duncan. "The society knows well," he said, "that political interference is a mere accident of public utility arising from the position it has otherwise attained. The great work of this society is not political. ..... The wisest judges of our society will pay but scant attention to our political proceedings, and so also will our best members. ..... This society will pay due attention to its political work as it arises, but it must devote its best energies to its scientific work."[17] With these words from the lips of perhaps the strongest and most influential president the society had ever had ringing in its ears and commending themselves to its deliberate judgment, the council could scarcely be expected, for some time to come at least, to take any very active part in the politics of the midwives question. It was accordingly content to go on quietly conducting its examinations, leaving to others the duty of promoting legislation. Of the examinations instituted by the society Dr. Matthews Duncan cordially approved. "This good scheme," he said, "has had an encouraging amount of success. ..... But this does

[13] See Appendix IV.

[14] Obstetrical Journal of Great Britain and Ireland, vol. iv., London, 1876-77, p. 60

[15] This interview took place on March 14th, 1879. A report of the proceedings was published in the British Medical Journal, vol. i., 1879, p. 449.

[16] A deputation from the Council did, however, in 1885 wait upon Sir John Lubbock (afterwards Lord Avebury), at that time Member of Parliament for the University of London and Treasurer of the Royal Maternity Charity, to endeavour to induce him to take up the question of the examination and registration of midwives and to introduce a Bill. But with a dissolution and general election impending the moment was not considered propitious and it was thought prudent to abstain from further action for the present.

[17] Transactions of the Obstetrical Society of London, vol. xxiii. (for 1881), London, 1882, pp. 66 and 67.

not satisfy us. We want a recognised legal position, chiefly registration, for graduates and we desire a great increase of the numbers taught and seeking our diploma. ..... Indeed, the improvement and extension of the practice of ordinary midwifery by women is a most desirable object. Many people," he said, "still living remember the time when the whole of this practice was in female hands. It was taken from them by the other sex, not because they were male but in consequence of their superior education and scientific attainments. ..... If women are to be re-instated in the practice of midwifery, whether in unnatural or in natural labour, it is education and science alone that can do it, and women may be sure that these are irresistible. Meantime we are interested only in the extension of women's usefulness in ordinary cases, natural or nearly natural; and our object is to secure for the public a class of such women, reliable, because duly qualified." From which remarks it seems highly probable that Dr. Matthews Duncan would have sympathised with the views expressed some years previously by Mr. Stansfeld at the interview already described.

From 1880 onwards the chairman of the board of examiners presented a report annually. After having been a member of the board of examiners for 12 years and its chairman for six years Dr. Aveling, at the end of 1883, retired from the board. In his farewell report he suggested that in future the examiners, who had hitherto given their services gratuitously, should receive some sort of honorarium. The suggestion does not appear to have been acted upon immediately, but a few years later, the number of candidates having by that time considerably increased, it was decided that the examiners should be remunerated and, accordingly, in 1888, "fees to examiners" occurs for the first time as an item in the treasurer's accounts. For the first 16 years, therefore, or nearly one-half of the entire period during which the society continued to hold its examinations, the examiners received no remuneration at all. After that they received a proportion of the candidates' fees.

Hitherto the action of the council in carrying on a system of voluntary examinations for midwives and in supporting the efforts of those who were anxious to secure legislation on the midwives question had never been challenged by the general body of Fellows, but at the annual meeting held on Feb. 4th, 1891, the whole matter was brought up for discussion. An agitation had arisen amongst the medical practitioners of the country in opposition, nominally to a Midwives Bill introduced into Parliament by Mr. Pease, but really directed against any recognition of midwives either by Parliament or by any voluntary examining body. It is not within the scope of this article to enter into matters of controversy, but in order to explain the attitude of the council of the society from this time forward it is necessary to mention that a certain number of the Fellows of the society sympathised with the agitation and endeavoured not only to prevent the society from supporting the proposed legislation but also from continuing its own voluntary examinations. In regard to the former it succeeded partially; in regard to the latter not at all.

The council never again adopted a scheme of legislation or prepared a Bill. The utmost it ever did in that direction was (at the request of the promoters) to consider the Midwives Bill of 1890 in detail and to suggest certain alterations, most of which were adopted by the committee in charge of the Bill but were swept away again when the Bill was taken up, as it was for a while, by the Government. Ultimately the council expressed itself as "in no way responsible for the present Bill,[18] though it emphatically approved of the principle of examination and registration of midwives, and saw no reason to depart from the view continuously held by all previous councils of the society." This attitude of the council was supported by the general body of Fellows assembled at the annual meeting in 1891, when the following motion was moved by Dr. Aveling, seconded by Dr. W. S. A. Griffith, and carried with but two dissentients: "That the Fellows approve the policy pursued by this society for the last 20 years relating to midwives, and respectfully request the council to continue their efforts to obtain for these women suitable education and legal registration."

Meantime the agitation in the country assumed larger proportions. A large number of medical practitioners, being assured that their interests would be imperilled if midwives received any kind of State recognition, took alarm and ranged themselves on the side of the opponents of legislation. Resolutions deprecating legislation were sent to the General Medical Council and letters were written to it calling attention to the certificates and diplomas granted by the Obstetrical Society of London and other institutions and persons to midwives who had successfully passed an examination. The General Medical Council had, in 1889, passed a resolution strongly urging the need for legislation on the subject, but in consequence of the representations now made to it it henceforth adopted a new policy. From December, 1892, up to March, 1895, a correspondence went on between the General Medical Council and the Council of the Obstetrical Society of London regarding the form and wording of the diploma or certificate issued by the society to those midwives who successfully passed the society's examination. The General Medical Council took exception to the society's diploma as being a colourable imitation of a diploma conferring a legal right and admission to the Medical Register, and intimated that if the society continued to issue this diploma such conduct would be regarded by the General Medical Council as being "infamous in a professional respect." The upshot of the whole matter was that the word "certificate" was substituted for the word "diploma," that the size of the document was reduced, that the figure of Lucina and the seal of the society were banished from it, and that the words "skilled midwife" were no longer employed. The new certificate differed from the old as tweedledum differs from tweedledee, and so the episode ended, the result being a net gain to the society in that its examination and certificate had now received an official recognition which they had not previously possessed.

The work of the society suffered no further interruption.[19] Being thus finally relieved from the necessity of defending itself against attack, the council was able to give its attention to certain much-needed improvements in what may be called its domestic policy. For example, up to the year 1898 midwives holding the society's certificates had had no rules for their guidance, printed or otherwise. This was felt to be an anomaly, especially as, since 1889, every candidate on receiving her certificate had been required to sign a declaration that she would faithfully obey the rules. Accordingly, the council and the board for the examination of midwives were formed into a joint committee to prepare a code of rules and regulations, and in July of the year just mentioned these rules were printed and published by the council, a copy being posted to every midwife whose name was on the society's roll, with an intimation that henceforward she would be required to conform to them. A copy was also from this time onward presented to each successful candidate along with her certificate. For the information of the Fellows and for purposes of reference the rules were printed in the Society's Transactions for 1899. Considering that it was impossible for a voluntary association like the Obstetrical Society of London to organise anything like an adequate system of supervision over those who had received its certificates, or in cases of misconduct, to impose penalties other than the extreme penalty of confiscating the certificate, the disciplinary

[18] This Bill was eventually talked out by Mr. Bradlaugh, as a protest against a certificate of moral character being required before registration in the case of midwives when no such certificate was required in the case of medical practitioners. Other Bills were introduced in 1895, 1896, 1897, and 1898, by Lord Balfour of Burleigh, Mr. Cosmo Bonsor, Mr. Tatton Egerton and Mr. J. B. Balfour respectively, but owing in the case of the 1895 Bill to a change of Government, and in the case of the other Bills to the Government requiring the day fixed for the second reading for its own business, none of them came to a vote. The second reading of the 1900 Bill, introduced by Mr. Tatton Egerton, was moved by Mr. Heywood Johnstone. It got as far as the report stage, when Mr. Heywood Johnstone deemed it prudent to talk it out. The (1902) Bill that eventually became law was introduced by Lord Cecil Manners, Mr. Heywood Johnstone taking charge of it in its subsequent stages.

[19] A further attempt was, however, made in November, 1899, to put a stop to the society's examinations. At a meeting of the General Medical Council held in that month Mr. George Brown moved: "(1) That notwithstanding the resolution of the executive committee passed on May 27th, 1895, the Registrar be instructed that the Council can no longer assent to the holding of examinations in midwifery, or to the granting of certificates of proficiency in the practice of that art by any body of persons, unless invested with legal authority to hold examinations and grant certificates in this branch of medicine. (2) That the Registrar be instructed to insert notices in the leading medical journals to the effect that on and after the 15th day of January next any registered practitioner who takes part in any examination in the art and practice of midwifery, or any other branch of medicine or surgery held by, or on behalf of, any society or person, or body of persons unless legally authorised to hold such examinations and grant certificates of proficiency to successful candidates will be liable to be adjudged guilty of infamous conduct in a professional respect and to have his or her name removed from the Medical Register." Something like two days' discussion followed and eventually terminated in the moving of the "previous question."

difficulties that arose in connexion with this branch of the society's work were singularly few. Inquiries were occasionally called for into cases of alleged misconduct and in a few instances, so few as to be capable of being counted on the fingers of one hand, the charges were substantiated and the certificates of the accused were cancelled.

Meanwhile, the society's certificate became recognised throughout the Empire as evidence of its holder's competency to attend ordinary cases of labour. It was "accepted as such by the Army Medical Department, by a large number of boards of guardians, nursing associations, and maternity societies." Being entirely independent of the training institutions, it acquired from that circumstance alone a unique value. The examiners who conducted the examination were in many instances the same who examined the candidates for medical degrees at the universities and for the qualifying diplomas of the Royal Colleges of Physicians of London and Surgeons of England and the Society of Apothecaries. The Queen Victoria Jubilee Institute of Nurses expected those of its nurses who took up midwifery to qualify themselves by undergoing the training enjoined by this society and passing its examinations, whilst the Midwives Institute made it a condition of membership that the applicant had obtained the society's certificate. It is no wonder, therefore, that the number of candidates increased to such an extent that extra examiners were required from time to time and that the premises in Hanover-square, extensive as they are, became too small for the purpose. No doubt the final rush was in some measure due to the impending establishment of a State examination. Candidates, not knowing what the nature and scope of the new examination were likely to be, hastened to avail themselves of an examination that they knew something about, but apart from that, as the appended table shows, the rate of increase had been very considerable even before the Midwives Act of 1902 had been passed. When, therefore, at the beginning of 1905 the society's examinations were superseded by the State examinations of the Central Midwives Board, as it had all along been the desire of the society that they should be, the society could look back upon this branch of its work with the gratifying consciousness that it had, in the words of Dr. W. R. Dakin, "succeeded in raising the standard of education of the midwives of this country and in helping to safeguard its mothers and new-born children." "If," continues Dr. Dakin, "the society had never done more than this, it would assuredly not have lived in vain."[20] "It is not too much to say," says the same writer in addressing the Fellows of the society[21] on another occasion, "that regarding it from a national point of view, the work that this society has done is a more useful one than has ever before been accomplished by any medical scientific society. ..... You have educated more than your midwives. ..... For unless you had shown, in the persons of those women who were considered worthy to receive your certificate, what a midwife might be made, the public could not have been stirred to the pitch of discontent with the old type" that ultimately rendered legislation inevitable and was certainly the immediate cause of the passing of the Midwives Act.

APPENDIX I. (*a*)

The following is an extract from that part of the first report of the Infant Mortality Committee (presented June 2nd, 1869) which has reference to midwives:—

"The first question asked related to the proportion of births attended by medical men and by women respectively, to the amount of instruction possessed by the women, and to the mode of procedure adopted with the infant immediately after its birth. From the replies given the following general statements are deduced,—that among the poor population of villages a large proportion, varying from 33 to 90 per cent., are attended by midwives. Thus in Fleggburgh in Norfolk, with a population of 524, Mr. Waller reports that 30 per cent. are attended by midwives. In Gringley, near Bawtry, Notts, with a population of 874, Mr. Raynes reports the number as 46 per cent., and at Bromyard, in Herefordshire, population 1300, Mr. Harley reports that as many as 90 per cent. are attended by midwives. In the small non-manufacturing provincial towns, on the other hand, attendance by midwives prevails to a much less extent, with a few exceptions. The large majority of the returns puts attendance by midwives in towns of a population of from 6000 to 10,000, as varying from 5 to 10 per cent., and in some few as not occurring at all—e.g., in Lewes, with a population of 3716, there is stated to be none. In Long Sutton, however, with a population of 6124, Mr. Ewen reports that attendance by midwives occurs to the extent of 28 per cent.; in Altrincham in Cheshire, with a population of 6828, Mr. Blease reports that attendance by midwives reaches as high a figure as 53 per cent. In the large provincial towns, and especially in the large manufacturing towns, attendance by midwives among the labouring population occurs in almost as large a proportion as in the agricultural villages. Thus, in Glasgow the return is 75 per cent., in Coventry 90 per cent. In Leeds, Sheffield, Birmingham, and Bury the proportion is not stated in figures but stated either to be large or the larger, in comparison, i.e., with attendance by qualified practitioners. In Wakefield, however, with a population of 23,000, Mr. Fowler reports that while among the Irish attendance by women prevails to a very large extent, among the English nearly every case is attended by a medical man. In Edinburgh, as reported by Dr. Matthews Duncan, attendance by midwives would appear to occur to but a trifling extent. Lastly, from London the reports vary accordingly as they came from the East or West, or from the suburbs. In the East of London, as Stepney, Barking, and Stratford, it would appear that from 30 to 50 per cent. of the poor are attended by midwives. In the West End, on the other hand, the proportion is very slight; thus Mr. Curgenven, Dr. Bloxam, and Mr. Gaskoin report that it amounts to 2 per cent. or even less. In a suburb such as Wimbledon Dr. Payne states the proportion of midwifery attendance by women to average about 5 per cent.

"To the question, 'Are the women instructed?' answers in the negative have been received from all parts of the country, with the exception of Glasgow and Sheffield, where Dr. Yeaman and Mr. Hime respectively report a certain amount of education to exist among the better class of midwives. From several districts the replies indicate not merely a want of any special education but gross ignorance and incompetence, and a complete inability to contend with any difficulty that may occur. In London, on the other hand, it would appear there are many women practising midwifery who have received a certain amount of instruction at various institutions, but these, although fairly competent in ordinary cases, are also quite unequal to any of the emergencies of obstetrics."[22]

APPENDIX I. (*b*).

Extract from the Final Report of the Infantile Mortality Committee, presented to the Obstetrical Society of London on Dec. 7th, 1870.

"In the first report there was no reply from Wales; to the second circular five fellows have responded. With respect to the proportion of births attended by medical men and midwives respectively, Mr. Evan Jones of Aberdare states that all the lower classes are attended by women, medical men being only called in in emergencies; Mr. Roberts of Rhyl puts the number at about one-half; Mr. Morgan of Llanelly, 80 per cent. by women; Dr. Jones of Ruabon, 90 per cent. by women; and Dr. Gwynne Harries of Pembroke Dock, more than a half by women. It may be concluded, therefore, that throughout the Principality, and more especially in the mining districts, the attendance of the lower classes is mainly in the hands of midwives, and of these every report states that they are in no degree instructed. ..... 'It would be very desirable (writes Mr. Evan Jones) if something could be done to prevent midwives acting as nurses in fevers and other contagious diseases and to prevent them from laying out dead bodies. In nearly every case of puerperal fever that has come under my notice no medical man attended the confinements.'

"Passing now to the replies from our English Fellows. To the first question no fresh information from villages has been received, but the statements of the first report as to the other classes of towns have been confirmed. Thus in Alnwick, Reigate, and Gravesend, towns containing populations of 8000, 10,000, and 18,000, the returns are respectively 30 per cent. by women, very few by women, and less than 5 per cent. by women. In two other towns, however, nearly as large—viz., Bideford, with a population of 5700, and Dorchester, with a population of 6800—the attendance by midwives is higher; in the first it is put at 75 per cent. and in the second at 65. But both of these towns partake of much of a strictly rural character. The return from Rochdale, on the other hand, entirely corroborates the opinion expressed as to the larger manufacturing towns, about 80 per cent. being attended by women. Lastly, Dr. Brunton, writing from the north district of London, puts the number attended by women at 30 per cent. All unite in stating that the midwives are uninstructed except in the case of a few practising in London."

APPENDIX II.

The New By laws respecting Examinations for Midwives, adopted on Jan. 3rd, 1872.

"*By-laws, Chap. XVI.*—I. That an Examining Board be formed, consisting of six members—viz., a chairman, three ordinary members, and the honorary secretaries *ex-officio* (the two non-official members of the Board longest in office to retire annually).—II. That examinations be held at the Society's library on the second Wednesday of the months of January, April, July, and October at eight o'clock P.M. or at such times as the Board of Examiners may from time to time determine.—III. That candidates for admission to the examination be required to submit to the honorary secretaries of the Society certificates of the following qualifications at least 14 days before the date of the examination: (*a*) a certificate of moral character; (*b*) a certificate showing that the candidate is not under 21 years of age and not over 30 years of age, but that up to the year 1877 candidates above 30 years of age be admitted to examination under special circumstances satisfactory to the Board of Examiners; (*c*) proof of having attended the practice of a lying-in hospital or charity for a period of not less than six months, or of having personally attended not less than 25 labours under supervision satisfactory to the Board of Examiners; (*d*) proof of having attended a course of theoretical teaching by lectures or tutorial instruction, the details of which must be submitted to, and receive the approval of, the Board of Examiners.—IV. That the candidates be required to pass (1) a written examination; (2) an oral and practical examination upon the following subjects: (*a*) the elementary anatomy of the female pelvis and generative organs; (*b*) the symptoms, mechanism, course, and management of natural labour; (*c*) the indications of abnormal labour and the emergencies which may occur in practice; (*d*) a general knowledge of the puerperal state; (*e*) the management of new-born children and infants; (*f*) the conditions as air, food, cleanliness, &c., necessary for health; (*g*) the duties of the midwife with regard to the patient and with regard to the seeking of medical advice.—V. That, on satisfying

[20] Report of the chairman of the Board of Midwives, December, 1904, Transactions of the Obstetrical Society of London, vol. xlvii. (for 1905), p. 79.

[21] Inaugural address, Transactions of the Obstetrical Society of London, vol. xlvii. (for 1905), p. 124.

[22] Loc. cit., pp. 133-4.

the Board of Examiners as to her qualifications, the midwife should receive a diploma certifying that she is a skilled midwife, competent to attend natural labour.—VI. That the fee for this diploma be one guinea and that unsuccessful candidates be required to pay a fee of five shillings."

APPENDIX III.

"*Suggestions for the Instruction, Examination, Licensing, Registration and Supervision of Midwives submitted by the Council of the Obstetrical Society of London in an interview with the Right Hon. James Stansfeld, M.P., on the 21st of November, 1873.*

"*Definition of a midwife.*—A healthy, sensible, respectable woman, able to read, write, and calculate, understanding the management of natural labour and the ordinary care of the mother and child after labour, and capable of recognising any conditions requiring medical aid during the parturient and puerperal states.

"*Instruction of midwives.*—This might be done by utilising the present lying-in charities and unions. Theoretical instruction might also be given by qualified medical men, and practical instruction at the bedside and preferably at the patients' homes, since experience has shown that it is neither necessary nor desirable to congregate a large number of lying in women under the same roof.

"*Examination and licensing of midwives.*—As no one can treat obstetric emergencies and diseases successfully until he or she has first fulfilled a complete medical curriculum such as qualified medical men are compelled to undergo, and as it is not proposed that such knowledge should be required of midwives, it can scarcely be expected that the universities, colleges, and corporations that license medical men would undertake the examination of midwives. The Obstetrical Society of London, having had repeatedly and urgently brought before its notice the sacrifice of human life and health occasioned by the practice of ignorant midwives, has already instituted an Examining Board for testing the knowledge of women desiring to follow the calling of a midwife, and has granted certificates to those who have satisfied its examiners. The Society is therefore able and is willing to undertake the examination, licensing, and registration of midwives if the Privy Council think it desirable. It would be necessary for the Society to have the power of instituting branch examining boards in the provinces. A similar method of examination and licensing might be carried out by examining boards appointed by the Obstetrical Societies of Edinburgh and Dublin.

"*Registration of midwives.*—It is believed that nothing short of compulsory registration of midwives will afford safe attendance during labour to those who are unable to distinguish between a good and a bad midwife. In future every woman undertaking the duties of a midwife in England and Wales should be required to pass the society's examination prior to registration, and no public appointment should hereafter be given to any midwife who is not registered. It is also thought desirable that all midwives at present in practice should, on the production of satisfactory evidence of fitness for the calling, be eligible to be placed on the register.

"*Supervision of midwives.*—Seeing that great injury might accrue to the public from the midwives thus registered neglecting or exceeding their duties, the Council deem it highly desirable that some mode of supervision should be adopted. This would perhaps be most easily effected by the renewal of annual licenses upon the production of a certificate of good character signed by a minister of religion, a magistrate, or a qualified medical man. It is also considered necessary that power should be given to the Examining Board after due investigation to erase from the register the name of any midwife who has grossly misconducted herself."

APPENDIX IV.

"*Suggestions drawn up by the Council of the Obstetrical Society of London and laid before the Lord President of the Privy Council (the Duke of Richmond) and the President of the Local Government Board on the 9th of March 1876, by a deputation from the Obstetrical Society and other public bodies.*[2]

"*Definition of a midwife.*—A respectable woman, able to read, write, and calculate, understanding the management of natural labour and the ordinary care of the mother and child after labour, and capable of recognising any conditions requiring the aid of a medical practitioner during the parturient and puerperal states.

"*Instruction of midwives.*—This might be done by utilising the present lying-in charities and unions. Theoretical and practical instruction might be given by authorised medical practitioners and practical instruction might also be given by registered midwives.

"*Examination and licensing of midwives.*—This would be best accomplished by a board of examiners especially formed for the purpose.

"*Registration of midwives.*—It is believed that nothing short of compulsory registration of midwives will afford safe attendance during labour to those who are unable to distinguish between qualified and unqualified midwives. In future every woman determining to be registered as a midwife in England and Wales should be required to pass the recognised examination prior to registration; and no public appointment should hereafter be given to any midwife who is not so registered. It is also thought desirable that all midwives at present in practice should, on the production of satisfactory evidence of fitness for the calling, be eligible to be placed on the register of midwives.

"*Removal of midwife's name from Register.*—Inasmuch as great injury might accrue to the public from registered midwives neglecting or exceeding their duties it is considered necessary that provision should be made for the erasure from the register of the name of any midwife who has gravely misconducted herself.

"*Title of registered midwife.*—The illegal assumption of this title should be a punishable offence."

[2] It will be noted that these "suggestions" differ in some respects from those handed in on a previous occasion (see Appendix III.), when a deputation from the society waited upon Mr. Stansfeld, the principal differences being (1) that the Obstetrical Society of London no longer suggested that it should itself undertake the examination, licensing, and registration of midwives, but expressed the opinion that these duties would be best accomplished by a board especially formed for the purpose; and (2) that nothing is said in this later document as to supervision or annual licensing.

APPENDIX V.

Table showing Result of Obstetrical Society's Examination for each year since its institution in 1872. (From the Transactions of the Obstetrical Society, Vol. XLVII. for 1905, p. 80, with additions.)

Year.	Candidates.	Passed.	Failed.	Absent.
1872	8	6	2	—
1873	12	11	1	—
1874	4	4	0	—
1875	3	2	1	—
1876	4	3	1	—
1877	4	4	0	—
1878	6	5	1	—
1879	13	12	1	—
1880	36	34	2	—
1881	30	27	3	—
1882	42	37	5	—
1883	64	53	11	—
1884	63	49	14	—
1885	82	68	14	—
1886	102	80	22	—
1887	127	96	29	2
1888	153	127	22	4
1889	170	143	25	2
1890	207	159	43	5
1891	258	204	52	2
1892	289	252	34	3
1893	339	286	40	3
1894	432	390	40	2
1895	467	420	33	14
1896	511	461	40	10
1897	590	523	49	18
1898	688	604	75	9
1899	842	705	119	18
1900	925	754	155	16
1901	980	769	195	16
1902	1274	966	260	18
1903	1545	1221	298	26
1904	1861	1507	331	23
1905 (one examination only)	674	558	113	3
Total	12805	10580	2031	—

THE RÔLE OF THE BLOOD PLASMA IN DISEASE.

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III.[1]

INFLUENCE OF PLASMA ON STRUCTURE.

WE have seen that the environing plasma affects the *function* of the cell in an infinite variety of ways. We have now to consider how far this same influence can affect its *structure*. That the plasma is capable of producing profound structural alterations is shown by the action of such substances as alcohol, arsenic, and phosphorus, all of which operate through its medium; and we are beginning to see that certain hormones, such as those yielded by the ovaries, testes, thyroid and adrenal glands, exert a remarkable influence on growth and development.

Function and structure proceed pari passu.—The environmental influences brought to bear upon the cell have, in fact, a potent influence over its structure, far more potent than is generally thought, for whatever modifies function modifies structure at the same time; *whenever*, i.e., *a new form of functional activity is induced in a cell, whether through its*

[1] Articles I. and II. were published in THE LANCET of Feb. 2nd (p. 313) and 9th (p. 375), 1907, respectively.

plasmic or non-plasmic environment, the cell undergoes structural modification. Further, this modification is of an adaptive kind, being an attempt on the part of the cell to adapt itself to the environmental agency causing it. The question whether function precedes structure, or the reverse, has long been debated; but the fact is, neither precedes the other: the two proceed *pari passu*. Whenever a cell is made to take on a new function its particles suffer an adaptive rearrangement which tends to abide. I am here, of course, using the term structure in a broad, comprehensive sense, to connote, that is, the relation to one another of the constituent atoms and molecules of the cell and not merely the grosser structure disclosed by the microscope; for it is hardly necessary to point out that the boundary set by the microscopist to the limits of structure is purely arbitrary, and is, moreover, continually receding as our means of investigation improve.[2]

The proposition that altered function implies altered structure I shall now seek to prove. First, as to the influence of *non-plasmic* stimuli in inducing new function and structure. These may be dismissed in a few words. In no case is the exquisite plasticity of protoplasm under environmental influence more admirably shown than in that of nervous tissue. Consider, for example, what happens in the highest visual centres when an object is presented to the view. Vibrations of light proceeding from the object impinge upon the retinæ and forthwith nerve impulses are flashed along the optic paths to the cortical centres of vision, inducing in them those mysterious changes which issue in a visual perception. Now we are compelled to assume that these changes affect structure, for how otherwise can the mind retain a memory of the perception? Clearly an enduring effect is produced, and if it is not structural, what is it? An enduring rearrangement of ions, atoms, molecules, or what not, has taken place—in other words, there has been a modification of the undiscoverable structure of the protoplasm. Indeed, we are compelled to assume that in every mental change a correlative structural change occurs in the brain, inasmuch as every mental state tends to persist in memory. It is true that many mental states rise but once into consciousness, but it is clear that they all leave some physical impress, however slight, since not one of them but persists in memory if repeated sufficiently often. Such a result can only be achieved by a summation of individual effects—by the continual addition, that is, of successive effects. And what is true of the neurons which subserve mentation is true of all neurons, since they are all endowed with memory. To take a single instance. The man who after a few trials has learnt to ride a bicycle may, without any further practice, retain the acquisition for many years. This implies a remarkable memory on the part of certain balancing centres and one which must have a structural basis. All parts of the nervous system appear to be similarly endowed.[3]

Next, as to the influence of the *plasma* in modifying structure. The cell activities just considered and the resulting structural changes are of a very subtle character, but scarcely more subtle than the functional activities and correlative structural changes which may be excited through the plasma. There is no difficulty in showing that every new form of functional activity thus set up leaves its structural impress. The extreme impressionability of cell structure to plasmic influences is admirably shown by the persistence in memory of olfactory perceptions, such perceptions being excited by odoriferous substances operating through the plasma circulating in the Schneiderian membrane.[4] Another instance of delicate structural change wrought through the plasma is the phenomenon of acquired immunity from bacterial poisoning. The acquisition of immunity is an adaptation to a specific environmental agency, and whether it be due to alteration in the character of "side-chains," or what not, it must have a structural basis, none the less real because undiscoverable by our limited means of research.

In further illustration of the same principle we may instance the adaptability of the organism to different kinds of food. Since the constitution of the plasma varies with the kind of food taken, any alteration in the latter, however slight, tends to make itself felt throughout the entire organism and to call forth a widespread adaptive response; but it will be sufficient for our purpose to refer to some of the adaptive changes which take place in the digestive canal in response to such alteration. It is now known that the quality and quantity of the digestive juices are greatly influenced by the kind of food taken. Thus, the "introduction of sand into a dog's mouth evokes profuse secretion of watery saliva; meat provokes secretion of thick viscid saliva; bread of thin saliva, chiefly from the parotid" (Starling); and similar adaptive reactions may be observed on the part of the pancreas, "the dog that has been on a bread diet secreting more amylopsin, while the dog on a proteid diet secretes a larger amount of trypsin or trypsinogen." Now let us suppose that an individual has for years been accustomed to a certain dietary. The activities of the digestive glands will have become so attuned to this dietary that when an entirely new one is substituted some time must elapse before the glands learn to accommodate themselves to it, to pour out, that is, the appropriate juices in appropriate quantities, and this difficulty will be the greater the longer the original dietary has been adhered to. We are thus compelled to assume that the long-continued functional activity of a certain kind has left a structural impress on the glands involved.

Adaptation may in a similar way take place to alcohol, tobacco, and drugs, and all such adaptations must be structural. This truth is well illustrated in the case of tobacco smoking. The first time a person smokes a pipe of strong tobacco he is generally appallingly sick and faint; on the second occasion these unpleasant symptoms are less pronounced and by degrees he may learn to smoke many pipes, not only without any apparent ill but with more or less enjoyment. What happens in such cases? The smoking of each successive pipe causes something to pass into the blood and affect certain nerve centres in a particular way; this gradually leads to an alteration in their structure, enabling them to resist the specific plasmic influence; they become, in fact, adapted to that influence. Obviously during the stage of probation each successive pipe induces some change, however slight, in the centres implicated and toleration is gradually acquired by a summation of these individual changes. When this stage of adaptation has been reached the plasmic influence is chiefly exercised in maintaining, and possibly in some degree increasing, the structual alteration. Other factors there may be in the acquisition of tobacco toleration. It is conceivable, for example, that it in part results from the organisms acquiring increased powers of neutralising, or eliminating, the absorbed poisons; but, even so, such acquisitions need a structural basis. It is certain that the man who has learnt to smoke is different from what he was before he learnt; and in what can the difference consist if it be not in altered structure?

The tolerance of alcohol and drugs is to be explained on similar lines. We have to do with a structural adaptation to a specific environmental agency. The familar fact that after a drug has been taken for some time continually increasing doses are needed to produce the desired effect is an admirable illustration of the same principle of adaptation. When the organism ceases to respond in the manner desired to a given dose of a drug, it is because it has become structurally adapted to it, though it would be wrong to suppose that the drug then ceases to produce any effect whatever; it continues to exert an influence in maintaining adaptation, and that often at the expense of the higher vitality of the affected structures. Because half a bottle of whisky or half an ounce of laudanum fails to cause mental clouding in the *habitué* it does not, of course, follow that so large a dose has no effect on the brain; it still operates in maintaining the brain in

[2] Let us suppose, for example, that (assuming Ehrlich's side-chain theory to be correct) the response of a cell to its plasmic environment has become altered by alteration in the character of certain side-chains belonging to its protoplasmic molecules, we must regard the cell as having undergone a structural change, though it be one undiscoverable by the microscope.

[3] I have elsewhere suggested that all nervous coördination takes place by a system of telephonic, or rather "dentritic," exchange between the ultimate dendrites of neighbouring neurons. According to this view the structural changes which underlie newly acquired coördinations, and indeed of all new mental combinations, affect essentially the dendrites.

[4] How long perceptions of smell may persist in memory is shown by the well-known tendency for old scenes and events to be mentally revived by the recurrence of some old-time smell. This has been explained by reference to the fact that the sense of smell loomed more largely in the mental world of our remote ancestors than it does in our own. The real explanation I take to be as follows: the kind of odour which calls up old memories is one which was frequently experienced in years gone by, but which has been but seldom, if ever, experienced since; and being thus mentally associated with long past scenes and events, and altogether unassociated with recent ones, it tends, whenever experienced, to revive its old associations. Were it experienced daily it would enter into association with so many other mental states that it would be much less likely to call up any particular ones.

that condition which enables it to resist the hypnotic influence of the large dose, while at the same time inducing steady structural deterioration. So completely may the cells become adapted to a pernicious environment that the sudden removal of the latter may actually depress function, as may happen, for example, when the opium eater suddenly leaves off taking the drug. When, therefore, we say that a drug has lost its effect we mean that the organism has become so structurally adapted to it that it no longer produces its characteristic therapeutic action.

We can on these lines explain, in part at least, the fact that when one drug, say a purgative, has lost its power a second kindred drug may be successful, and that when this has ceased to operate a third may prove effective, so that it may be advisable to ring the changes between them. Evidently the organism undergoes adaptation to each drug in succession, but when after several have been given and each in succession has lost its power the first is again resorted to, it may now prove effective, the organism having meanwhile reverted to the *status quo ante* as regards that drug.

From the foregoing observations it is clear that new function implies new structure, and nothing better shows the exquisite plasticity of the living cell than this fact that *the slightest modification in its functions leaves a structural impress*. The fact that the structure of the cell is throughout life so greatly under the control of its environment prepares us for the conclusion that the growth and development of the component cells of the organism, as well as of the organism in its entirety, are largely determined by the nature of the environmental influences, plasmic or other, brought to bear upon them. In order the better to realise what a large part the cell environment, plasmic or other, plays in the development of the organism let us trace its influence on the vital cycle, first of the individual cell and next of the entire organism. In tracing these influences I shall deal chiefly with those which operate through the plasma, touching only briefly on the effect of other environmental agencies.

INFLUENCE OF THE PLASMIC ENVIRONMENT ON THE STRUCTURE OF THE CELL.

A consideration of the circumstances which determine the evolution and dissolution of the cell makes it evident that its entire career is as much the outcome of environmental influence as of inborn impulse; indeed, that the development of the cell is not so much due to the operation of forces from within as to its capacity to be moulded in definite ways by specific environmental influences; that *the cell environment, notably the plasmic environment, is chiefly responsible for whatever disease may affect the cell*; and that even *the final senile decay of the cell results rather from extrinsic than from intrinsic causes*.

The destiny of the cell being thus the resultant of the reaction between internal and external forces, it is often difficult to determine how far any defect it may display, in respect either of evolution or dissolution (disease) is of intrinsic, and how far of extrinsic, origin, or in popular language, how far it is inborn in the cell or how far acquired by it.

It is necessary here to define the term "inborn cell defect." By it I mean one which is due to a defect in that part of the fertilised ovum, or zygote, which gives origin to it. The phenomena of Mendelian heredity seem to show that many of the anatomical features of the offspring are separately represented in the ovum and the spermatozoon, so that they may be separately inherited from one or the other parent. From this we seem justified in concluding that every system of cells in the embryo has its counterpart representative in the zygote, and this we may refer to as a "zygotic rudiment." If the zygotic rudiment of a given system of cells—e.g., the nervous system—be properly constituted, then a normal nervous system will develop, provided the individual neurons derived from it are normally environed; but if, on the other hand, it be defectively constituted, then, even though the derived neurons be normally environed, the nervous system will not develop properly. In this latter case the defect is clearly inherent in the neurons. Should the nervous system, again, fail to develop properly, even though derived from a normal zygotic rudiment, the cause of the defective development must lie in the environmental influences brought to bear upon the individual neurons. In such a case the defect has been acquired by the defective cells. It should, however, be noted that though acquired by those cells it yet may be inherent in the organism, resulting as it may do from some inborn defect of some important plasma-forming tissue, in consequence of which the developing neurons are bathed in abnormal plasma. Only when the nocuous environment of the defective cells is secondary to some defect in the external environment of the organism, as in the case of rickets, which is known to have a pernicious effect upon the nervous system, can the defect be said to be acquired by the organism itself.

Let us now trace out the career of an individual cell; a neuron will serve our purpose. The vital cycle of our neuron we may divide into two phases—that of evolution or development, and that of dissolution or decay, though the two are not altogether separate in time; for not only may they overlap, the neuron continuing to evolve in some respects while it has already begun to deteriorate in others (as in the case of a nervous acquisition made during the period of senile decay), but it is possible for the phase of evolution to be temporarily interrupted by one of dissolution, as may happen, for example, during an acute febrile disorder occurring in early life.

Cell evolution.—Starting its career as a tiny fleck barely visible under the strongest microscope, the subsequent behaviour of the cell depends, as we have seen, upon its inborn powers (as represented by its initial structure) as determined by the constitution of the zygote, and upon the multitudinous environmental influences which are subsequently brought to bear upon it. In considering these latter we must give due weight to the length of time during which they continue to operate. Let us remember that the neurons may attain to a great age, that they do not, like some cells, such as the chromocytes, perish periodically, their place being taken by new-formed cells, but that, on the contrary, they persist throughout the lifetime of the organism to which they belong. A neuron may, in fact, outlast a century, and it is surely a remarkable fact that there exist at this moment multitudes of human neurons which began their career in the early part of last century and have thus lived through some of the most momentous developments in man's history. If we reflect that during every moment of this long period these neurons have been played upon by a multiplicity of influences we may form some faint conception of the vast array of forces which have been brought to bear upon them.

In order that the neuron shall develop properly it is necessary that it shall be equipped from its start with the proper developmental powers—i.e., that its initial structure, as determined by its zygotic rudiment, shall be normal, and also that it shall be subjected during the entire period of its development to proper environmental influences; that it shall be bathed in normal plasma containing a due supply of nutrient materials, hormones, &c., and that it shall be duly stimulated by the ceaseless passage through it of nerve impulses. Among the hormones which profoundly influence the growth and development of the neuron are those yielded by the thyroid gland and by the ovaries and testes; for the absence of the thyroid gland in early life results in cretinism and early removal of the ovaries and testes prevents the nervous characteristics of sex from developing; there can, indeed, be little doubt that the differences in the nervous organisation of the man and the woman are mainly due to the differences in the nature of the hormones circulating in each. The nerve impulses which are needful to the normal development of the neuron are, as we have seen, started either by the chemical stimulus of the plasma or by non-plasmic stimuli operating upon the organism from without, in the shape of such agencies as light and sound vibrations. Education in its technical sense consists essentially in the application of non-plasmic stimuli, chiefly to the retinæ and auditory expanses, through which the development of the entire nervous system is affected for good or evil.

Let us suppose now that these various environmental influences have been of a kind conducive to the normal development of our neuron and that it has attained to normal maturity. It is important to note that though it may continue to make fresh acquisitions almost to the very end of its career it does not long maintain the efficiency of early maturity. Even during the stage of what may be called full maturity, say, from the age of 25 to 40 years, some deterioration, slight though it may be, tends to take place with each successive year. What is the cause of this? Is it intrinsic or extrinsic? I contend that it is largely extrinsic and that if on the attainment of maturity

the neuron continued to be bathed in healthy adolescent plasma it would, as regards its efficiency, tend to remain indefinitely *in statu quo*. Some amount of deterioration would no doubt set in even in such circumstances, but it would be long delayed.[5] The neuron does not, however, continue to be flushed with youthful plasma. This fluid from maturity onwards undergoes a steady alteration in composition and the result is a parallel alteration in the structure of the neuron. During the early years of maturity the plasma undergoes comparatively little alteration and the neurons in large measure preserve their perfection of structure, but during the later years of maturity, and above all during the period of senescence, the plasma undergoes very decided changes and as a result the neurons deteriorate, at first slowly but later more rapidly, their senile degeneration being further aided by the sluggishness of plasmic flow obtaining in the aged. *The neuron does not, that is, become senile wholly from spontaneous causes, but has senility in large measure thrust upon it, so to speak.*

Such is in brief the history of a neuron which has gone through a normal vital cycle. Let us now consider the case of one in which that cycle has been abnormal. Such abnormality may result from imperfect evolution or from dissolution.

Imperfect evolution of a neuron may be due to initial structural defect (one, namely, having its origin in the zygotic rudiment of the nervous system), or it may be the result of some unfavourable environmental influence operating upon it: and when we consider how complex are the influences operating upon the neuron during its development, the long time that development lasts, the fact that every new form of functional activity set up in a neuron affects its structure, and finally the fact that the neuron is of all cells the most impressionable—when we take all this into consideration it will be readily admitted that the environment of the evolving neuron affords abundant opportunity for influencing its structure unfavourably.

The unfavourable environmental influence may operate through the plasma or it may be non-plasmic. Defect as regards the plasmic environment may be inborn or it may be acquired. Inborn plasmic defects are those that result from defect in the zygotic rudiment of some plasma-forming organ, such as the thyroid gland, ovary, or testis. It is clear that in these cases the nervous system, not being furnished with normal plasmic constituents, will not develop properly, even though its zygotic rudiment be normal; and we shall then have to do with a defectively organised nervous system which, though not the result of inherent defect in the nervous system, is nevertheless due to causes inherent in the organism, causes taking their origin in the zygote. There can, I think, be little doubt that many faulty conditions of the nervous system are due to the influence upon it of a plasma defective from inherent causes. It is probable, for example, that many varieties of nervous diathesis arise in this way.

It will thus be seen that inborn defects of the nervous system may result from defect in the zygotic rudiment of the nervous system, or in that of some plasma-forming organ, and it has further to be observed that an inborn defect, possibly in quite a limited portion of the nervous system itself—e.g., of the centre controlling the activities of the thyroid gland—may lead to serious plasmic defect, which in its turn may interfere with the normal development of the nervous system. And in this connexion it has to be remembered that the neurons far surpass all other cells in their influence on the bodily activities, not only because the muscle and gland cells are directly influenced by them, but because, by their influence on the glands and on the cardio-vascular system, they control the elaboration, purification, and circulation of the plasma, and thus indirectly influence the activities of all the cells in the body, including the neurons themselves.

From these considerations it is manifest that inborn defects in nervous organisation—those due, that is, to defective organisation of the zygote—may be classified as follows:—

- Inborn nervous defect (resulting from defective zygote).
  - Defect in rudiment of nervous system.
    - Egoistic
    - Altruistic—leading to defective control of plasma-forming organ.
  - Defect in rudiment of plasma-forming organ.

We have now to consider the case of acquired plasmic defects. These are such as are due to unhealthy conditions of life. If there be no inborn weakness the plasma will be normal, provided the conditions of life be normal. Slight temporary illnesses will, it is true, occur from time to time, and occasionally, perhaps, more serious ones, all of which, by causing temporary plasmic defects, will affect the structure of the neuron, but the permanent effect will in most cases be infinitesimal, owing to the tendency of every cell to return to the normal after the noxious agency has ceased to operate upon it. If, on the other hand, the conditions of life be bad, the plasma will be defective and the nervous system, even though initially normal, will not develop normally. When we consider how endless are the ways in which the plasma may suffer from this cause and in how large a proportion among the civilised it never is healthy, is it surprising that individuals with defective nervous organisations are the rule rather than the exception?

As illustrating how the development of the nervous system may suffer from an acquired plasmic defect reference may be made to rickets. This disease is strictly acquired. It is a toxæmia of gastro-intestinal origin; all the cells of the organism, the neurons among the rest, are bathed in morbid plasma and there is a general disturbance of metabolism in consequence. That the neurons are profoundly affected is shown by the nervousness of rickety children and by the tendency they display to convulsions, laryngismus stridulus, and tetany, and conformably with the principle that altered function implies altered structure it is clear that the nervous system must suffer structurally in this disease. In minor degrees this disorganisation may be recovered from, but in more pronounced cases permanent damage may be left which in later life may express itself in so serious an affection as epilepsy.

A word finally as to the influence of the non-plasmic environment in interfering with the normal development of the nervous system. Unless the neurons be properly stimulated through their non-plasmic environment they will not develop properly. When, for example, the eyes are destroyed at birth, say, from purulent ophthalmia, so that the retinæ are not stimulated by light, the neurons which subserve vision never attain their normal development; again, when any of the upper motor neurons are destroyed in early life the lower motor neurons which they energise suffer in development. Similarly irrational education may be in no small measure responsible for defective nerve development. Proper education demands that the neurons shall receive a due amount of the right kind of stimulation; that they shall neither be over-stimulated or under-stimulated, nor stimulated in the wrong way. There can be no doubt that over-stimulation, or *strain*, at school may interfere with the proper development of the nervous system.

Cell dissolution.—Having seen the influence of the environment in interfering with the normal evolution of the neuron I will now briefly advert to its power to cause dissolution of it. Senile degeneration is, as we have seen, largely due to environmental causes, but apart from this physiological dissolution the neurons, like other cells, are liable to pathological dissolution; and, as with defective evolution of the neuron, so in the case of dissolution of it, it may be impossible to decide how far the result is due to intrinsic, and how far to extrinsic, causes. In some cases,

[5] That animal cells have an inherent tendency to grow senile and ultimately to perish appears from a study of unicellular organisms. The latter differ from the cells composing complex multicellular organisms in that their environment is much the same from the beginning to the end of their career and does not, as in the case of the constituent cells of multicellular organisms, change in a definite way with every epoch in the life of the latter. To these cyclical changes in the individual cell environments I attribute in large measure the cyclical changes which the component cells of the human organism undergo. But seeing that no such changes take place in the environment of unicellular organisms it is evident that the changes which they pass through are essentially intrinsic in origin. It has been said that unicellular organisms are immortal and it is true that under appropriate conditions they may multiply indefinitely; but here we have to do rather with the immortality of a vital chain than of individual organisms since each has but a brief individual existence, sooner or later losing its individuality in giving birth to others. That unicellular organisms tend to become senile is shown by the fact that when such an organism has given rise to a certain number of others, the ultimate descendants, unless reinvigorated by conjugation with other cells, lose the power of further propagation and perish, as the result of what is practically a senile degeneration. Unicellular organisms which have thus lost the power of propagation may be compared to the muscle, gland, and nerve cells of fully developed multicellular organisms, for these latter cells are the ultimate barren descendants of the conjugating unicellular organisms (ovum and spermatozoon). Judging from analogy we should therefore expect that they, like unicellular organisms, tend to become senile from inherent causes.

as in infantile paralysis and locomotor ataxy, there can be no doubt as to the operation of an extrinsic factor. In others—e.g., in the family palsies—the dissolution may appear to be essentially due to defect in the zygotic rudiment of the nervous system. In these cases, neurons which have apparently undergone normal evolution and which have given no indications whatever of unsoundness appear to degenerate spontaneously; but, as I shall again insist, it is difficult to believe that such degeneration is wholly intrinsic and that the environment can be entirely exonerated from a share in their causation. Dissolution may also be caused through the non-plasmic environment, as in the different kinds of occupation neuroses, such as are observed, for example, in blacksmiths, cigar-rollers, and musicians, in which the injurious effects of over-action on the neuron are well shown. These may also be observed even in the toxic degenerations, such as locomotor ataxy, in which the most functionally active parts tend to degenerate first.

Summary.—Function and structure change together: whenever a new form of functional activity is induced in a cell the latter undergoes a contemporaneous change in its structure, and this of a kind calculated to adapt the cell to the environmental agency causing it. In the case of unicellular organisms the vital cycle is essentially determined by intrinsic causes, the environmental influences being much the same during every stage of their vital career. In the case of the component cells of multicellular organisms, on the other hand, the vital cycle—development, maturity, and decay—is largely determined by the environmental influences brought to bear upon them. These influences, unlike those operating upon unicellular organisms, undergo a series of changes from the beginning to the end of the life of the parent organism, and these changes play a large part in determining the vital cycle of the component cells. Every system of cells in the embryo is derived from its own particular rudiment in the zygote. If the zygotic rudiment be properly constituted, and if the cells derived from it be properly environed throughout their career, they will pass through a normal vital cycle; but if either be defective the derived cells will likewise be defective.

(To be continued.)

ARMY MEDICAL DEPARTMENT REPORT FOR 1905.

SECOND NOTICE.[1]

WE are, as we have already said, on the eve of several radical changes in army reorganisation which lend a somewhat special interest at the present time to these reports, and the recent lecture by Lieutenant-Colonel F. A. Davy, late R.A.M.C., at the Royal United Service Institution on the injurious effect of that part of the young soldier's drill directly concerned with the artificial method of chest expansion in vogue, with the strain which he contends comes from the forced attitude connected therewith, naturally causes a reference to be made to that section of the report dealing with recruiting.

One of the principal features of the new scheme of army reform is the creation of a national army, and for that purpose we have to get some measure of the standard of general health and vigour of the civil population from which recruits are drawn. Unfortunately, this is not, so far as the Registrar-General's annual report of the vital statistics of the population of England and Wales for 1905 or the army returns for that year are concerned, of a reassuring nature.

The former, while it shows a continued improvement in public health, a general increase in population, and a decrease in death-rate, nevertheless shows a continued decrease in birth-rate, and this is markedly the case as regards most of the rural districts of England and Wales. It need scarcely be said that it is to these areas that we should look for a strengthening of the best elements in the upkeep of the population. The most vigorous portion of the nation is being drained off from the country to the town. Of course, this is nothing new but it has of late years become more pronounced.

Turning to the section of the Army Medical Report dealing with the recruiting of the army we find:—The number of recruits inspected during the year was 66,703. Of these 23,681, or 355·02 per 1000, were rejected as unfit, and 43,022, or 644·98 per 1000, passed fit for the service. 1207 of the latter were, however, subsequently discharged as unfit for service within three months of enlistment, thus making the total number of rejections equal to 24,888, or a ratio of 373·12 per 1000.

Compared with the corresponding ratios of the previous year an increase of 16·83 has occurred in the ratio of rejection on inspection and one of 4·00 in that of those rejected within three months of enlistment. The total ratio of rejection has, therefore, increased by 20·83, the ratio of men found fit having decreased by the same amount. It cannot be doubted, of course, that a large number of the unemployed and unemployable classes present themselves for enlistment, but the fact has to be taken into account in our efforts to maintain a permanent and efficient "striking force" or in our attempt to create a national army. The proportion per 1000 recruits furnished by England and Wales, Scotland, and the Colonies has increased by seven in the first-named and one each of the latter, whilst the proportion for Ireland shows a decrease of nine as compared with the number furnished in 1904. The largest number of rejections on inspection was caused by defective development (under height, weight, and chest measurement). Deficient chest measurement gives the highest ratio amongst these developmental causes of rejection. Among other causes of rejection, loss or decay of many teeth, defective vision, and disease of the heart, 25·62 per 1000, occupy prominent places. Among recruits found unfit within three months of enlistment the most frequent causes of rejection were loss or decay of many teeth (403 cases), disease of the heart (113), and of the arteries (aneurysm), 2. It is somewhat difficult to say how many of the total number of those found unfit within three months owe their unfitness to the causes alleged by Lieutenant-Colonel Davy. It is satisfactory to know, however, that the army medical authorities are alive to the importance of the issues raised. Speaking generally, the physical improvement resulting from a course of military drill as ordinarily carried out is usually noticeable enough.

The Army Medical Report under review contains many other subjects also calling for notice and observation. But those with which we have already dealt have so largely encroached upon the space at our disposal that we must refrain from saying anything about enteric and other fevers or about diseases of tropical or subtropical climates and must content ourselves by referring our readers to pages 221–41 of the report, where they will find the subject of the prevalence of malarial fevers in India very carefully discussed at some length.

[1] The first notice was published in THE LANCET of Feb. 16th, 1907, p. 451.

Looking Back.

FROM

THE LANCET, *SATURDAY*, Feb. 21st, 1829.

YELLOW FEVER AT GIBRALTAR.

To the Editor of THE LANCET.

SIR,—I send you the following account of a successful method of treating the yellow fever, which has lately committed such dreadful ravages at Gibraltar: it is extracted from a letter received from a gentleman of great respectability, and a particular friend of mine, resident at the rock; the authenticity of the communication I can, therefore, perfectly rely on; I shall give the statement in his own words; if you think it worthy of insertion in your spirited Publication, I shall be obliged by its appearance in an early number. I am, Sir,

Your admirer and reader,

Leominster, Jan. 29, 1829. HENRY RUDGE.

My friend, Mr Oxberry, first observes "that persons having once recovered from this fever are not liable to a second attack, which marks the distinction between the *Yellow Fever* of Gibraltar, and that of the *West Indies*. He states, the only remedy which has proved successful in this

dreadful disease, is the administration of a large cupful of olive oil every half hour till copious vomiting ensues, which is to be promoted by drinking freely of warm water; the treatment is to be continued till the stomach discharges nothing but *water:* at the same time, frequent injections of olive oil and salt-and-water should be administered; afterwards, an ounce and a half of castor oil, with the injections to be continued till the fever subsides. The patient may drink freely of lemonade and acids to excite perspiration; and for diet, good soup, without a particle of grease, is given. Out of 85 patients treated in this manner by a Spanish doctor, (whose name is not stated,) only one died. The English practitioners commenced with calomel and bleeding, and under this treatment lost every patient; seeing the efficacy of the *oil*, they adopted it, and proved its value by their subsequent success; were this treatment adopted in the West Indies it might save the lives of many."

ROYAL INSTITUTION.

THERE was a very crowded attendance at the Royal Institution on Friday last, when Mr. Faraday delivered a Lecture on the Active Molecules existing in Solid Bodies, Organic and Inorganic, as discovered recently by Mr. Brown. Mr. Faraday, by drawings and specimens, showed that living and dead substances, such as muscle, stone, &c., produced minute particles capable of motion, some of which were of the 1-15,000th of an inch, and descending so low as 1-30,000th part of an inch. The Lecture was very loudly applauded.

There were several curious presents on the Library table, among which was a tonque usually worn by the chiefs of Britain in past ages, found in Merionethshire; some rare Chinese paintings, by native artists, &c.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8470 births and 6259 deaths were registered during the week ending Feb. 16th. The annual rate of mortality, which had increased in the four preceding weeks from 18·1 to 20·9 per 1000, declined again to 20·4 in the week under notice. During the first seven weeks of the current quarter the death-rate in these towns averaged 20·1 per 1000, the rate during the same period in London being 20·5. The lowest annual death-rates in the 76 towns during the week were 7·6 in King's Norton, 10·3 in East Ham and in Leyton, and 11·0 in Hornsey; the rates in the other towns ranged upwards to 27·3 in Portsmouth, 30·4 in Newport (Mon.), 31·6 in St. Helens, and 33·9 in Plymouth. The 6259 deaths in the 76 towns showed a decline of 172 from the number returned in the previous week, and included 412 which were referred to the principal epidemic diseases, against numbers increasing from 381 to 466 in the four preceding weeks; of these, 136 resulted from whooping-cough, 124 from measles, 74 from diphtheria, 33 from diarrhœa, 26 from scarlet fever, 19 from "fever" (principally enteric), and not one from small-pox. The deaths from these epidemic diseases were equal to an annual rate of 1·3 per 1000 in the 76 towns, the rate from the same diseases in London also being 1·3. No death from any of these epidemic diseases was registered last week in Brighton, Wolverhampton, Walsall, Stockport, or in nine other of the 76 towns; the annual death-rate therefrom, however, ranged upwards to 3·9 in Great Yarmouth, 4·8 in Newport (Mon.), 5·2 in Grimsby, and 7·9 in St. Helens. The 136 fatal cases of whooping-cough showed a decline from the increasing numbers in recent weeks; it caused, however, an annual rate of 1·5 in Middlesbrough, 1·7 in Tottenham, 1·8 in Preston, and 2·0 in Stockton-on-Tees. The 124 deaths from measles also showed a decline; the highest rates therefrom were 2·0 in Great Yarmouth, 2·3 in West Bromwich, 3·0 in Grimsby, 3·4 in Newport (Mon.), and 7·3 in St. Helens. The 74 deaths referred to diphtheria had also decreased, but the disease showed fatal prevalence in Reading, South Shields, Grimsby, and Great Yarmouth. The fatal cases both of scarlet fever and "fever" were exceptionally few. No case of small-pox has been under treatment in the Metropolitan Asylums Hospitals since the end of June last. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and in the London Fever Hospital, which had steadily declined in the seven preceding weeks from 3846 to 3059, further fell to 3035 in the week under notice; 368 new cases of this disease were, however, admitted to these hospitals during the week, against 307, 319, and 311 in the three previous weeks. The deaths in London referred to pneumonia and other diseases of the respiratory organs, which had increased from 466 to 526 in the four preceding weeks, were 527 in the week under notice, and exceeded the corrected average in the corresponding week of the last five years by 124. The causes of 59, or 0·9 per cent., of the deaths registered during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in Leeds, Bristol, West Ham, Hull, Newcastle-on-Tyne, Salford, and in 44 other of the 76 towns; the proportion of uncertified deaths, however, again showed marked excess in Birmingham, Liverpool, Bootle, Rotherham, and South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been equal to 19·1, 20 5, and 23·0 per 1000 in the three preceding weeks, declined again to 22·0 in the week ending Feb. 16th, but exceeded by 1·6 the mean rate during the same week in the 76 English towns. The rates in the eight Scotch towns ranged from 19·0 and 19·5 in Greenock and Perth to 22·5 in Glasgow and 23·1 in Leith. The 764 deaths in the eight towns showed a decline of 36 from the number returned in the previous week, and included 84 which were referred to the principal epidemic diseases, against 85 and 105 in the two preceding weeks. These 84 deaths were equal to an annual rate of 2·4 per 1000, which exceeded the rate from the same diseases in the 76 English towns by 1·1; they included 49 which were referred to "fever," 20 to whooping-cough, six to diarrhœa, five to diphtheria, four to measles, and not one either to small-pox or scarlet fever. The 49 deaths referred to "fever" showed a further marked increase upon recent weekly numbers, and included 39 in Glasgow, three each in Edinburgh, Paisley, and Leith, and one in Dundee; 36 of the 39 fatal cases of "fever" in Glasgow, and all those returned in the four other Scotch towns, were certified as cerebro-spinal meningitis. The 20 fatal cases of whooping-cough in the eight towns showed a decline of 16 from the number in the previous week; they included 13 in Glasgow and six in Aberdeen. Of the six deaths attributed to diarrhœa four occurred in Glasgow and two in Aberdeen. Three of the five fatal cases of diphtheria were returned in Glasgow; and all the four deaths from measles occurred in Edinburgh. The deaths in the eight towns referred to diseases of the respiratory organs, including pneumonia, which had been 125 and 178 in the two previous weeks, declined again to 168 in the week under notice, but exceeded the number in the corresponding week of last year by 34. The causes of 20, or 2·6 per cent., of the deaths registered in the eight towns during the week were not certified or not stated; the mean proportion of uncertified deaths in the 76 English towns during the same week did not exceed 0·9 per cent.

HEALTH OF DUBLIN.

The annual death-rate in Dublin, which had been equal to 24·8 and 28·6 per 1000 in the two preceding weeks, further rose to 31·4 in the week ending Feb. 16th. During the first seven weeks of the current quarter the death-rate in the city averaged 28·8 per 1000, the mean-rate during the same period not exceeding 20·5 in London and 20·7 in Edinburgh. The 235 deaths of Dublin residents during the week under notice showed a further increase of 21 upon the numbers in recent weeks, and included nine which were referred to the principal epidemic diseases, against 14 in the preceding week. These nine deaths were equal to an annual rate of 1·2 per 1000, and included four from whooping-cough, three from measles, one each from diphtheria and diarrhœa, and not one either to scarlet fever, "fever," or small-pox; two deaths were, however, referrred during the week to cerebro-spinal meningitis. The fatal cases both of whooping-cough and measles showed a decline from the numbers in the previous week. Four inquest cases and four

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING THE YEAR 1906.

(Specially compiled for THE LANCET.)

CITIES AND BOROUGHS.	Estimated population in the middle of 1906.	NOTIFIED CASES OF INFECTIOUS DISEASE.										DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.												
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cholera.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Typhus fever.	Enteric fever.	Other continued fevers.	Diarrhœa.	Total.	Annual rate per 1000 persons living.	Deaths from all causes.	Death-rate per 1000 living.	Deaths of infants under one year to 1000 births.
LONDON	**4,721,217**	**31**	**10,319**	**8045**	**7**	**1600**	**9**	**298**	**5019**	**2**	**25,340**	**7·5**	—	**1909**	**533**	**661**	**1226**	—	**260**	**4**	**4414**	**9947**	**1·13**	**71,155**	**15·1**	**130**
West Districts.																										
Paddington	148,913	1	717	183	—	34	1	12	139	—	1087	7·3	—	16	18	15	12	—	7	—	125	193	1·30	1856	12·5	112
Kensington	180,982	—	470	178	—	39	—	13	148	—	848	4·7	—	81	11	19	20	—	5	—	144	280	1·56	2499	13·8	137
Hammersmith	120,679	—	437	278	—	33	1	12	125	—	886	7·4	—	57	15	27	19	—	8	—	131	257	2·13	1777	14·8	142
Fulham	161,965	—	674	404	—	45	—	18	140	—	1281	7·9	—	53	18	32	31	—	13	—	241	388	2·40	2214	13·7	136
Chelsea	74,672	—	271	162	—	17	—	12	60	—	522	7·0	—	28	9	15	17	—	—	—	52	151	2·03	1168	15·7	141
City of Westminster	173,905	—	537	209	—	47	2	9	127	—	931	5·4	—	17	14	16	23	—	5	1	69	145	0·84	2244	12·9	119
North Districts.																										
St. Marylebone	123,280	—	396	141	—	48	—	6	148	1	740	5·8	—	47	14	12	11	—	3	—	77	164	1·28	1910	14·9	79
Hampstead	89,633	—	387	99	—	21	1	2	51	—	561	6·3	—	10	5	8	2	—	3	—	23	51	0·57	844	9·4	79
St. Pancras	236,455	—	798	279	—	95	—	10	235	—	1417	6·0	—	66	22	23	10	—	15	1	155	292	1·65	3743	15·9	131
Islington	344,967	1	1392	439	3	146	1	24	277	—	2283	6·6	—	193	37	30	74	—	20	—	201	555	1·62	5071	14·7	128
Stoke Newington	53,217	—	135	47	—	10	—	1	47	—	240	4·5	—	11	1	4	17	—	—	—	25	58	1·10	612	11·5	104
Hackney	230,721	9	1049	389	1	93	2	19	301	—	1863	8·1	—	65	22	20	39	—	14	—	203	363	1·58	3061	13·3	116
Central Districts.																										
Holborn	55,805	—	138	66	—	15	—	2	57	—	278	5·0	—	25	3	6	10	—	1	—	35	80	1·44	1001	18·0	91
Finsbury	97,466	—	449	198	—	45	—	7	139	—	838	8·6	—	123	15	23	54	—	14	—	110	349	3·59	2011	20·7	126
City of London	21,367	—	113	18	—	10	—	—	18	—	159	7·5	—	3	7	2	4	—	1	—	6	23	1·08	369	17·3	106
East Districts.																										
Shoreditch	116,108	—	627	144	—	37	—	6	150	—	964	8·3	—	75	19	15	61	—	5	—	157	362	3·13	2275	19·6	169
Bethnal Green	130,609	6	650	252	—	55	—	11	245	—	1219	9·4	—	60	22	20	63	—	14	—	154	333	2·55	2464	18·9	157
Stepney	307,176	4	1219	604	1	124	—	6	415	—	2373	7·7	—	175	37	61	104	—	26	—	437	840	2·74	5431	17·7	133
Poplar	170,673	2	571	249	—	86	—	8	206	—	1122	6·6	—	108	13	28	52	—	11	—	291	503	2·95	1969	17·6	155
South Districts.																										
Southwark	209,143	—	1470	401	—	111	—	13	332	1	2328	11·2	—	95	45	31	54	—	12	—	225	462	2·23	3768	18·1	147
Bermondsey	128,629	1	990	336	2	41	—	2	195	—	1567	12·2	—	94	29	34	51	—	4	—	165	377	2·94	2532	19·7	154
Lambeth	315,774	—	1264	422	—	90	1	25	273	—	2075	6·6	—	77	28	51	71	—	22	1	282	532	1·69	4726	15·0	121
Battersea	179,622	—	1048	275	—	45	—	13	161	—	1542	8·6	—	41	24	18	78	—	8	—	158	327	1·82	2392	13·4	129
Wandsworth	273,381	—	1069	556	—	96	—	23	269	—	2013	7·4	—	66	19	49	60	—	15	—	226	435	1·60	3481	12·8	124
Camberwell	274,132	6	1161	355	—	59	—	15	305	—	1901	7·0	—	112	25	40	77	—	13	—	247	514	1·88	3998	14·6	132
Deptford	115,495	1	643	305	—	41	—	9	158	—	1157	10·0	—	69	15	20	62	—	6	—	128	310	2·69	1849	16·1	145
Greenwich	105,350	—	567	409	—	43	—	6	100	—	1125	10·7	—	31	17	29	42	—	5	—	72	196	1·87	1415	13·5	119
Lewisham	148,463	—	557	261	—	25	—	6	97	—	946	6·4	—	21	14	21	27	—	1	1	130	215	1·45	1777	12·0	113
Woolwich	127,345	—	525	386	—	41	—	8	97	—	1057	8·3	—	30	5	22	21	—	9	—	105	192	1·52	1668	13·1	110
Port of London	—	—	5	—	—	8	—	—	4	—	17	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

deaths from violence were registered during the week; and 90, or 38·3 per cent., of the deaths occurred in public institutions. The causes of 14, or 6·0 per cent., of the deaths registered during the week were not certified; the percentage of uncertified deaths in the week under notice did not exceed 4·1 in Edinburgh, and in London the causes of all but one of the 1819 deaths were duly certified.

VITAL STATISTICS OF LONDON DURING 1906.

STATISTICS of sickness and mortality in the City of London and in each metropolitan borough during the year 1906 will be found summarised in the accompanying table. The mortality figures relate to the deaths of persons actually belonging to the various boroughs and are the result of a complete system of distribution of the deaths occurring in London institutions among the boroughs in which the deceased persons had previously resided. With regard to the notified cases of infectious diseases, it appears that the number of persons reported last year to be suffering from one or other of the nine diseases specified in the table was equal to an annual rate of 7·5 per 1000 of the population, estimated at 4,721,217 persons in the middle of the year. In the three preceding years the rates had been 6·0, 6·1, and 7·0 per 1000 respectively. Among the various boroughs the rates last year ranged from 4·5 in Stoke Newington, 4·7 in Kensington, 5·0 in Holborn, 5·4 in the City of Westminster, and 5·8 in St. Marylebone, to 9·4 in Bethnal Green, 10·0 in Deptford, 10·7 in Greenwich, 11·2 in Southwark, and 12·2 in Bermondsey. The prevalence of small-pox again showed a great decline last year, only 31 cases being notified, against 416, 491, and 74 in the three preceding years; of these 31 cases nine belonged to Hackney, six to Bethnal Green, six to Camberwell, four to Stepney, and two to Poplar. During the year 28 small pox patients were admitted into the Metropolitan Asylums hospitals, but there were none remaining under treatment at the end of the year. Scarlet fever was more prevalent in 1906 than it had been in any of the three preceding years, 20,329 cases being notified, against 12,531, 13,438, and 19,461. Among the various metropolitan boroughs this disease showed the greatest proportional prevalence in Shoreditch, Southwark, Bermondsey, Battersea, Deptford, and Greenwich. There were 18,622 scarlet fever patients admitted into the Metropolitan Asylums hospitals during last year, against 10,808, 11,629, and 17,592 in the three preceding years; the number of cases remaining under treatment at the end of the year was 3787, against 1606, 2349, and 3410 at the end of the three preceding years. The prevalence of diphtheria showed a marked increase last year, the number of persons reported to be suffering from this disease or from membranous croup being 8045, against 7738, 7220, and 6482 in the three preceding years. The greatest proportional prevalence of this disease occurred in Hammersmith, Fulham, Bermondsey, Deptford, Greenwich, and Woolwich. The Metropolitan Asylums hospitals contained 995 diphtheria patients at the end of last year, against 734, 800, and 701 at the end of the three preceding years; the number of admissions, which had been 6158, 5783, and 5380 in the three preceding years, rose again last year to 6478. There was a slight increase in the prevalence of enteric fever last year, as compared with that in the preceding year; the number of notified cases, which had been 2339, 1896, and 1552 in the three preceding years, rose again to 1600 last year. This disease was proportionally most prevalent in Islington, Finsbury, the City of London, Bethnal Green, Poplar, and Southwark. The number of enteric fever patients admitted into the Metropolitan Asylums Hospitals during 1906 was 934, against 1247, 1008, and 831 in the three preceding years; 134 cases remained under treatment at the end of the year, against 246, 159, and 78 at the end of the three preceding years. Erysipelas showed the greatest proportional prevalence in Finsbury, Bethnal Green, Stepney, Southwark, Bermondsey, and Deptford. The 298 cases of puerperal fever notified during the year included 25 which belonged to Lambeth, 24 to Islington, 23 to Wandsworth, 19 to Hackney, and 18 to Fulham.

During the year under notice 71,155 deaths of persons belonging to London were registered, equal to a rate of 15·1 per 1000, against 15·2, 16·1, and 15·1 per 1000 in the three preceding years, the average rate for the ten years 1896–1905 being 17·3 per 1000. Among the various metropolitan boroughs the lowest death-rates last year were 9·4 in Hampstead, 11·5 in Stoke Newington, 12·0 in Lewisham, 12·5 in Paddington, 12·8 in Wandsworth, and 12·9 in the City of Westminster; the highest rates were 18·0 in Holborn, 18·1 in Southwark, 18·9 in Bethnal Green, 19·6 in Shoreditch, 19·7 in Bermondsey, and 20·7 in Finsbury. In the five groups of boroughs the rates were 13·7 in the west, 14·1 in the north, 14·7 in the south, 18·2 in the east, and 19·4 in the central. To the principal infectious diseases, 9047 deaths were attributed during the year; of these, 1909 resulted from measles, 533 from scarlet fever, 691 from diphtheria, 1226 from whooping-cough, 260 from enteric fever, four from ill-defined pyrexia, and 4424 from diarrhœa, but not any from small-pox or from typhus fever. These 9047 deaths were equal to a rate of 1·93 per 1000; in the three preceding years the death-rates from these infectious diseases were 1·75, 2·14, and 1·70 per 1000 respectively, the mean rate in the ten years 1896–1905 being 2·32 per 1000. The death-rates last year from these diseases ranged from 0·57 in Hampstead, 0·84 in the City of Westminster, 1·08 in the City of London, 1·10 in Stoke Newington, 1·28 in St. Marylebone, and 1·30 in Paddington, to 2·69 in Deptford, 2·74 in Stepney, 2·94 in Bermondsey, 2·95 in Poplar, 3·13 in Shoreditch, and 3·59 in Finsbury. The 1909 deaths referred to measles were 260 below the corrected average number; among the various metropolitan boroughs this disease was proportionally most fatal in Chelsea, Finsbury, Shoreditch, Poplar, Bermondsey, and Deptford. The 533 fatal cases of scarlet fever were 66 in excess of the corrected average number in the four preceding years; the greatest proportional mortality from this disease occurred in the City of London, Shoreditch, Bethnal Green, Southwark, Bermondsey, and Greenwich. The 691 deaths from diphtheria were 109 below the corrected average number; among the various metropolitan boroughs this disease was proportionally most fatal in Hammersmith, Fulham, Chelsea, Finsbury, Stepney, Bermondsey, and Greenwich. The 1226 fatal cases of whooping-cough showed a decline of 402 from the corrected average number in the four preceding years; the highest death-rates from this disease were recorded in Finsbury, Shoreditch, Bethnal Green, Battersea, Deptford, and Greenwich. The 264 deaths referred to different forms of "fever" were 120 below the corrected average number; among the various metropolitan boroughs "fever" was proportionally most fatal in Fulham, Hammersmith, Finsbury, Bethnal Green, Stepney, Lambeth, and Woolwich. The 4424 fatal cases of diarrhœa were more than 1000 in excess of the average number; the greatest proportional mortality from this disease was recorded in Fulham, Finsbury, Shoreditch, Stepney, Poplar, and Bermondsey. In conclusion it may be stated that the aggregate mortality in London last year from these principal infectious diseases was very slightly below the average for the four preceding years.

Infant mortality, measured by the proportion of deaths among children under one year of age to registered births, was equal to 130 per 1000 last year, against 130, 144, and 129 in the three preceding years. The rates of infant mortality in 1906 ranged from 79 in St. Marylebone and in Hampstead, 91 in Holborn, 104 in Stoke Newington, 106 in the City of London, 110 in Woolwich, 112 in Paddington, and 113 in Lewisham, to 145 in Deptford, 147 in Southwark, 154 in Bermondsey, 155 in Poplar, 157 in Bethnal Green, and 169 in Shoreditch.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments are notified:—Fleet Surgeons: R. H. J. Browne to the *Majestic*; P. E. Maitland to the *Albion*; H. W. G. Doyne to the *King Edward VII.*; G. Hewlett to the *Prince George*; and H. Clift to the *Dido*, on recommissioning. Staff Surgeons: G. Taylor to the *Terrible*; H. B. Hall to the *President*, for three months' course at West London Hospital; E. D. J. O'Malley to the *Majestic*, on recommissioning; A. C. Bean to the *King Edward VII.*, on recommissioning; F. D. Lumley to the *Mars*, on recommissioning; H. P. Jones to the *Attentive*; and R. S. Bernard to the *Talbot*, both on completing. Surgeons: A. R. Thomas to the *Ariadne*; R. B. Scribner to the *Albion*, on recommissioning; J. R. Muir to the *Pembroke*, additional, for Chatham Dockyard; G. H. S. Milln to the *Fantome*, on commissioning; P. F. Minett to

the *Halcyon*, on recommissioning; A. J. Laurie to the *Mars*; A. J. Hewitt to the *Prince George*; and P. F. Alderson to the *Surprise*, all on recommissioning; D. V. Lowndes to R.M.A. Division at Portsmouth; and R. L. Jones to Plymouth Hospital.

ROYAL ARMY MEDICAL CORPS.

The undermentioned Lieutenants from the Seconded List to be Lieutenants: Hugh E. Gotelee (dated Jan. 30th, 1907) and John H. Spencer (dated Feb. 1st, 1907).

The undermentioned to be Lieutenants on probation (dated Jan. 28th, 1907): Winfrid Kelsey Beaman, Colin Cassidy, Alexander Donald Fraser, Michael Patrick Leahy, Frederick Thomas Turner, Archer Fortescue, Howard Graeme Gibson, John Lawrence Wood, Stephen Field, Richard Dominick O'Connor, Donald Francis Mackenzie, John Errol Moritz Boyd, Geoffrey Carlisle, Edward Meredyth Middleton, Owen Reginald McEwen, John Herbert Gurley, Frederick Hercy Montagu Chapman, Alfred Charles Elliott, John du Plessis Langrishe, William George Aviss, William Brooke Purdon, Henry Marrian Joseph Perry, John Charles Hart, Malcolm Orr Wilson, Thomas Henry Scott, Leopold App Arthur Andrews, Gerald Fitzgerald Rudkin, Vincent Theodore Carruthers, Harold William Farebrother, and Francis Casement.

Lieutenant Colin Cassidy is seconded under the provisions of Article 349, Royal Warrant (dated Jan. 28th, 1907). Lieutenant Benjamin Johnson, from the Seconded List, to be Lieutenant (dated Feb. 1st, 1907). Lieutenant Robert G. Anderson is seconded for service with the Egyptian Army (dated, Jan. 30th, 1907).

ROYAL ARMY MEDICAL CORPS IN INDIA.

The following officers on arrival in India for duty in the Northern Command have been posted for duty to the stations as follows: Major H. N. Dunn, Ambala; Captain A. Chopping, Peshawar; and Captain J. W. S. Seccombe, Rawal Pindi. Lieutenant F. M. M. Ommanney, having exchanged with Lieutenant G. S. C. Hayes, has on arrival in India been posted to Rawal Pindi. Captain H. G. S. Webb is appointed a specialist in the prevention of disease. Captain W. E. Hudleston has been transferred from Kamptee to Mhow, Captain T. S. Coates to Neemuch, Lieutenant W. M. MacDowall to Kamptee, and Lieutenant C. D. M. Holbrooke to Kirkee. Lieutenant-Colonel B. T. McCreery is ordered to be transferred from Secunderabad Division to Eastern Command for command of the Station Hospital, Shahjahanpore. Lieutenant-Colonel A. L. F. Bate is detailed for duty on transport *Dongola*, sailing from Karachi on Feb. 20th, 1907. Major E. W. Slayter is detailed to do duty on transport *Assaye*, leaving Bombay on April 10th.

The following officers of the Royal Army Medical Corps have passed in the subjects for promotion to next higher rank: Majors A. Y. Reily, A. P. Blenkinsop, W. T. Mould, R. J. W. Mawhinny, T. W. Gibbard, H. P. Johnson, W. J. Taylor, and F. R. Buswell; Captain R. J. Franklin; Lieutenants A. C. Osburn, R. R. Lewis, C. H. Turner, F. H. Noke, W. F. H. Vaughan, T. C. Lucas, J. A. Turnbull, S. C. Bowle, P. Dwyer, N. Low, L. V. Thurston, J. E. Hoar, R. E. Humphrey, and W. G. Maydon.

THE ARMY ESTIMATES.

The Army Estimates will be issued almost immediately and may be confidently expected to show a saving, but it is not probable that the medical vote can be seriously affected in this respect. There is much curiosity manifested as to the nature and extent of the forthcoming alterations of army organisation in general.

NETLEY.

The total number of invalids who arrived at Netley from abroad in 1905 amounted to 2559. Of this number 22 died, 1333 were discharged to duty, and 1025 were invalided from the service.

ALDERSHOT SEWAGE FARM.

The Camp Farm at Aldershot, we learn, was worked very satisfactorily during 1905, according to the last army medical report, and there were no complaints regarding the effluent.

LEICESTER INFIRMARY.—The memorial stone of the new (south-east) wing of this institution will be laid by the Duke and Duchess of Rutland on Wednesday next, Feb. 27th, at 12 o'clock.

Correspondence.

"Audi alteram partem."

THE METROPOLITAN STREET AMBULANCE SERVICE.

To the Editors of THE LANCET.

SIRS,—Lest some of the statements made in connexion with the conference held at Gray's Inn-square on Saturday, Feb. 9th, should mislead those not thoroughly acquainted with the urgent needs of London in regard to an efficient street ambulance service, may I bring to your notice the inclosed statement and emphasise the following points?

1. All those medical men, and more especially those in charge of our great hospitals who see the patients as they arrive, coroners, and those who have studied the question thoroughly, are agreed that the present provision of ambulance in London for dealing with street accidents and medical casualties is lamentably inadequate.

2. That notwithstanding all that has been done in London for years, of the 15,000 to 20,000 severe accidents occurring each year, more than 70 per cent. are removed to home or hospital in cabs, carts, or other unsuitable conveyances, often thereby causing more serious injury than the original accident and in some cases even death.

3. That to be most efficient an adequate emergency service such as is required should be devoted entirely to accidents and medical casualties with a view to be always ready and able to start within a few seconds of being summoned by telephone.

4. That London should be divided into accident areas and a suitable number of horsed or motor ambulances kept ready in each.

5. That each ambulance should be properly equipped, in charge of a skilled attendant, and rapid enough to reach the scene of the accident before the policeman in charge of the traffic has been compelled, on account of the gathering crowd, to force the victim into the nearest cab.

It must be remembered that the representatives of the community are responsible for properly caring for those citizens who through accident or sudden illness become helpless in the streets and public places and that they would be guilty of culpable negligence if in removing them improperly they caused them further injury. It is to be hoped that there will be no confusion in the public mind as to the different requirements necessary for the equipment of an ever-ready emergency service such as a street ambulance service, and the much less exacting conditions of an ambulance service used merely for removing cases of illness from private houses to hospital; the first approximates more nearly to the Fire Brigade in its organisations, while the latter more to that of the job-master. The responsibility in the two cases is entirely different: the first is urgent and imperative and must be undertaken by the community in charge of the streets and public places, while in the second it is open to debate. With regard to the cost of an adequate service, our nation which stands at the head of all countries in preventive medicine should not need to be reminded that prevention is less costly than cure.

I am, Sirs, yours faithfully

ARTHUR JAMES,
Hon. Secretary.

Gloucester-terrace, W., Feb. 18th, 1907.

THE SURGEON'S POWER OF LIFE AND DEATH.

To the Editor of THE LANCET.

SIRS,—When looking through the pages of THE LANCET of Feb. 16th I was surprised to find that I had come within the sweep of Dr. James A. Rigby's facile and angry pen. I offer no criticism on the general tenor of Dr. Rigby's letter; I make no claim to a right of criticism of his opinions; but when he criticises me I have a right to claim that he should not misrepresent me. In Dr. Rigby's letter he says, "It is manifestly absurd, for instance, for Dr. W. Russell to say 'that in some quarters it seems to be thought that the time is not far distant when the art of the physician will become obsolete and be replaced by the craft of the surgeon,' and then to try to prove that position by describing three cases.'

The next sentence in the paper to which Dr. Rigby refers reads: "If this prediction be ever realised the fault will lie at the door of the physician and of the general practitioner." The introductory part of my paper was a plea for accuracy and detail in abdominal diagnosis on the part of the physician and for a sufficient knowledge of surgery to understand what he might advise his patient to submit to. Dr. Rigby's representation is "manifestly" *inaccurate!* And if this is an indication of his type of mind I do not think that controversy can be carried on with any advantage to the cause of knowledge or of truth. The records of modern operative procedure on the gastro-intestinal tract, although so voluminous, must have altogether escaped Dr. Rigby's notice, for he is still "thirsting for information" even from me. He asks about my Case 3, operated on Sept. 29th last, and I am glad to be able to state that she came to see me at the Royal Infirmary on Feb. 13th; that she assured me she was perfectly well and strong, able to attend to her domestic duties, eating ordinary food, and her weight, taken by myself, was 9 stones 2½ pounds, while before the operation it was 6 stones 11 pounds. This woman would have been dead months ago without the operation; she has, as the result of the operation, enjoyed months of comfort and her family has had her care and supervision. Whether the operation was done early enough to insure non-recurrence is a question I do not venture to answer. If Dr. Rigby thinks such results not worth seeking for it is not my province to criticise his opinion, but I think early diagnosis well worth striving after, so that I may early advise my patient to face the surgical risk. The problems of malignancy were not "brushed aside." I did not discuss them, for it was not the proper occasion for a declaration of belief on that subject. I was appealing to a body of graduates who realised the practical question as fully, I should hope, as I did, and it is stated in my paper that I advised operation in the hope that the surgeon might be able entirely to remove the disease. What is wanted is early and accurate diagnosis from practitioner and physician; then the removal of a stomach cancer will involve the same problem as the removal of cancer from any other part of the body, and the possibility of recurrence is over-balanced by the hope that in skilful hands removal will be complete. I venture to suggest to Dr. Rigby that the remarks in his final paragraph directed against his critic are such as, from my standpoint, are applicable to himself. I entirely fail to see why I should have been forced into a correspondence in which I was not interested. If Dr. Rigby wishes to initiate a Quixotic crusade against modern surgery I desire that he should not, by misrepresenting me, compel me to write letters in my own vindication. I have had almost as many years in medicine as Dr. Rigby, and my experience as a physician of the surgery of the abdomen fills me with gratitude, in spite of occasional disappointments.

I am, Sirs, yours faithfully,

Edinburgh, Feb. 18th, 1907. WILLIAM RUSSELL.

TUBERCULOSIS CURED OR IMMUNISED?

To the Editors of THE LANCET.

SIRS,—In regard to the article on the induction of auto-vaccination by the x rays which appeared in THE LANCET of Jan. 26th I made the statement: "This case is not considered cured nor as yet completed." During the past ten weeks the patient has been subjected to regular physical respiratory and vocal exercises at the hands of a voice trainer in this town. I was latterly informed that these exercises, at their maximum, were about as much as she was able to endure—short of fatigue. As during this time she had not been under any medical treatment, I considered it advisable to have her tuberculo-opsonic index estimated once again, which, for the reasons stated above, I expected would have come down to 0·8, the negative limit of the normal mean range, although her general health seemed to have been otherwise well maintained.

On Jan. 31st last the blood was taken in the usual way and was sent to Mr. A. B. Batley and Dr. W. E. Facey with a note that, in addition to the tuberculo-opsonic index, I was desirous of knowing whether by the application of the exquisitely delicate test for diagnostic purposes, known as "the heated serum test" of Sir A. E. Wright,[1] this blood *could be proved to be* that of a person in any remote degree tubercular. I am assured that this investigation was most painstakingly carried out by these two shrewd observers who, although on the first day they, both working independently on the same specimen, found the tuberculo-opsonic index to work out at unity, nevertheless did not offer any decision till they could devote the next day to the matter.

I received on the morning of Feb. 2nd the following report and I venture to think that it speaks for itself: "Unheated serum, tuberculo-opsonic index = 1·03. Heated serum, tuberculo-opsonic index = 0·09."

Note on the above observation.—"Where the tuberculo-opsonic index is found to be *persistently* normal the diagnosis of tuberculosis in any form may with probability be excluded. But it is not safe to assume this from a single observation. It is true that in localised (tubercular) infection such an index is seldom found, though it occurs occasionally ....."—(Signed) W. E. F., A. B. B."

Mr. Batley and Dr. Facey had therefore the strongest possible grounds for concluding that this blood was probably not that of a person suffering from tuberculous disease in the most remote degree. But if I may be allowed to hazard an opinion—there is no such thing as a *cure* in the strictly medical sense—no perfectly healthy man has ever existed or does exist. He is simply immunised *but* by this method of auto-vaccination he is immunised against the *causa causans*—i.e., the identical *strain or strains of bacilli or associations of these* which were responsible for bringing about the elaboration *in vivo*, in the particular individual, of the necessary metabolic defensive product required for meeting the special needs of his organism. It will be seen, therefore, that the term *immunised* is merely a relative one.

I am, Sirs, yours faithfully,

Bournemouth, Feb. 9th, 1907. HENRY D. MCCULLOCH.

MEAT DIET AND THE TEETH.

To the Editors of THE LANCET.

SIRS,—There is a striking contrast between the diffidence now shown by Dr. Spriggs in making a simple comparison between different sections of bone, which in a previous letter he described as excellent, and his former boldness in drawing conclusions from sections of teeth which were never referred to in my demonstration as they were only present incidentally in the sections and clearly showed to the eye of an expert such obvious artifacts that it was impossible to make any legitimate deduction from them. In the circumstances I quite understand his reluctance to answer my question whether there was any essential difference between the histological appearances of the bones in the second generation of meat-fed rats and those of the bones of the infant, aged 16 months, the child of a tuberculous subject, who had been fed for a prolonged period prior to, and during, gestation on a diet containing a great excess of meat. The question was an embarrassing one. To answer it in the affirmative was impossible. To answer it in the negative was to destroy the *raison d'être* of his letter published in THE LANCET of Jan. 26th.

In that letter Dr. Spriggs suggested that I was mistaken in ascribing many of the effects observed to a meat diet and that they were probably due to a deficiency of lime and other bases. I realise from the terms of his letter in your issue of last week that this criticism was really due to a confusion of thought and that my reply (Feb. 2nd, 1907) has failed to bring the present issue clearly before him. I must remind him that my communication was simply a demonstration of structural changes which had *de facto* followed the use of an excessive meat diet under certain conditions. If other observers obtain the same results the inevitable conclusion is that an excessive meat diet administered in the observed conditions is the inducing cause of the structural changes; and my critic cannot evade this

[1] Proceedings of the Royal Society, 1906, vol. lxxvii., p. 194. Conclusions of Wright and Reed. Where repeated examination reveals a persistently normal opsonic power with respect to the tubercle bacillus, the diagnosis of tubercle may with probability be excluded. Where the tuberculo-opsonic power is found normal or nearly normal, while there are symptoms which suggest tuberculosis, we are not warranted, apart from the further test described below, in arriving at a positive or a negative conclusion. When a serum is found to retain in any considerable measure, after it has been heated to 60° for ten minutes, its power of inciting phagocytosis we may conclude that "incitor elements" have been elaborated in the organism either in response to auto-inoculation occurring spontaneously in the course of tubercular infection or, as the case may be, under the artificial stimulus supplied by the inoculation of tubercle vaccine.

conclusion without repudiating the whole inductive method. But *why* such diet causes the changes; what constituent in that diet is the efficient cause of the alteration of structure; whether the addition of inorganic material would counteract the effect of the excessive meat; these and the like are questions which belong to a different stage of our investigations.

Dr. Spriggs contends that "whether the results produced in rats are due to the want of lime and other bases or whether they are an expression of the failure of a naturally omnivorous animal to rapidly adapt itself to a purely flesh diet it is clear that they cannot be directly applied to the case of civilised man who never in ordinary circumstances lives upon a diet of meat alone." As stated that is merely a truism. It would never occur to a scientific investigator to apply a general rule competently deduced under a given set of conditions to another set of conditions materially different; and, for my part, I would not suggest that the results of my observations on rats in confinement could be rightly predicated even of rats taking the same diet but enjoying a large amount of exercise.

But it is evident from the terms of your correspondent's latest letter that he means something much more, and more serious than this. He says: "Until the causation of the results is more exactly known their application to modern human dietetics is unjustifiable and discussion useless." Before discussing this statement I must remark that I do not consider it quite ingenuous for Dr. Spriggs to take up this position and at the same time ignore the question I have already quoted regarding the histological appearance of the bones of the infant. To admit that there was a substantial identity in the appearances would have raised too powerful a presumption in favour of the application of my results to the human subject. This is a course which, in the opinion of Dr. Spriggs, is unjustifiable until the causation of these results is more exactly known. It seems to me that this opinion places your correspondent in a serious dilemma. It either commits him to the condemnation of the comparative method in physiology or it places him in the position of a man who says, "I know this is hurtful and that is beneficial, but I don't know why they are so, and until the reasons are determined I will not use my knowledge." The latter position is impossible and we know that Dr. Spriggs does not condemn what I have described as the comparative method. As Oliver Sharpey lecturer he recently delivered two lectures on Metabolism to the Royal College of Physicians of London. The subject of nitrogenous metabolism in man specially includes the subject of urea formation. Has the author of these lectures failed to realise that practically all we know about urea formation in man is knowledge directly applied from physiological experiments on animals which have been made under conditions no more "ordinary" than those of my experiments? In the same lectures the author gives us a further admirable corrective to his present judgment. He quotes with approval the masterly researches of Pawlow and makes a direct application of these results to human dietetics. He appears to be unaware that the actual experiments indirectly referred to by him were carried out under conditions further removed from "natural" than my own. I would suggest to Dr. Spriggs that in matters of science consistency of reasoning is of some importance and that in entering the field of discussion on matters new it is unwise to forget the attitude adopted in matters old.

I am, Sirs, yours faithfully,

Edinburgh, Feb. 10th, 1907. CHALMERS WATSON.

THE CURRANT AS A FOOD.

To the Editors of THE LANCET.

SIRS,—That Mr. James Cantlie should inveigh so concernedly against the currant in his letter appearing in THE LANCET of Feb. 16th, p. 462, is a matter that elicits surprise at first thought but amazement afterwards when he gives further his reasons for his conclusions. He has gone diametrically opposite to the majority of observers in condemning the currant; now I will make bold to give a reason why the currant should not be so peremptorily stigmatised that is diametrically opposite to the one he has given. It is in bread that the currant will cause the least harm, while in soft puddings, rice, &c., it may certainly be a danger, for bread must be masticated before swallowing, and the currants in it will be broken up of necessity. Soft milky puddings with unbroken currants in them are often swallowed without chewing; thus the whole currants may cause trouble. I am, Sirs, yours faithfully,

HAYDN BROWN, L.R.C.P. Edin.

Caterham, Surrey, Feb. 17th, 1907.

THE ETIOLOGY AND PREVENTIVE TREATMENT OF CEREBRO-SPINAL MENINGITIS.

To the Editors of THE LANCET.

SIRS,—May I be permitted to point out that the causation of this disease is not summed up in the statement that it is due to the diplococcus of Weichselbaum or to any other microbe? Granted that it is immediately due to a microbe attacking the meninges, the question arises, How does it get there? The importance of tracing causation in all its steps lies in the fact that it is only by so doing that we can apply preventive treatment.

With the view of providing a clue to this preventive treatment I beg to submit the following hypothesis. One necessary preliminary to the advent of the microbe to the meninges is the existence of some abrasion or ulceration, however slight, of the faucial, tonsillar, or pharyngeal mucous membrane. Such lesions afford at once a nidus for the growth of the infective microbe and an open door for its admission to the various channels by which the meninges may be reached. *Primâ facie*, this hypothesis is rendered highly probable by the coincidental prevalence of sore throats and throat coughs, and it indicates the line that investigation ought to follow in order to prove it. That is to say, the throat ought to be examined whenever possible and the presence or absence of cough, irritation of the throat, or discharge from the nostrils should be noted. Moreover, the history of the case previous to the development of the characteristic symptoms ought to be ascertained by careful questioning of those who are most likely to know it and in this way some antecedent illness during the preceding days or weeks will in most cases be brought to light. In some of these cases, at least, it is safe to say that illness will have been influenza, though not necessarily in its typically acute form. And I am also convinced that the throat lesion in many is that very prevailing one—a superficial ulceration of the fauces which frequently extends to the post-nasal mucous membrane. I refer to that characteristic lesion of influenza which I briefly described in the *British Medical Journal* in 1899 under the title of "The Influenza Throat." This mode of causation is rendered all the more likely by the fact that the diplococcus of Weichselbaum has been found in the nasal discharge in some cases of epidemic meningitis.

If the hypothesis I have suggested is the correct one, it shows us, without going any farther, that the prime requisite for prevention is the disinfection of the throat, nostrils, and post-nasal area by suitable antiseptics, preferably applied in the form of spray. In the case of children too young to submit to this, a harmless disinfectant that might be swallowed with impunity could be applied to the mouth and nostrils with a small ordinary syringe. May we hope that those who come into contact with such cases will put these suggestions to the proof and report the result to the medical press?

I am, Sirs, yours faithfully,

W. FLEMING PHILLIPS, M.B. Glasg.

Fairlie, N.B., Feb. 16th, 1907.

THE PUBLIC HEALTH OF TENERIFFE.

To the Editors of THE LANCET.

SIRS,—Will you kindly allow me to draw attention in your columns to the changes that have taken place in the sanitary affairs of the island of Teneriffe since the publication of the letter of your correspondent, Dr. W. H. Peile? The infectious disease referred to by him was limited to the town of Santa Cruz and its immediate radius. From Orotava, which is the principal health resort of the island, Santa Cruz is distant 25 miles, and not one of the ten practitioners in this valley has seen a single case of the disease. In Santa Cruz the facts are now as follows. There has been no fresh case for 20 days. The lazaretto has been closed and the doctor and his staff relieved of their duties. Communication with the interior of the island is freed from all restrictions. Travellers

are not submitted to inspection or disinfection, and their luggage is not interfered with. In fact, the epidemic is at an end.

It is certain, therefore, that none need be deterred from sending patients to Teneriffe by the recent alarms, and I may take advantage of this opportunity to call attention to the fact that there remain four of the best months of the season, and this does not include June, which is usually one of the pleasantest of the year, the mean temperature being 69·5° F. and the country more beautiful than at any other time. The value of the Canary Islands climate has never been more apparent than lately. In the last six weeks weather of great severity has been general over Europe. The cold has been severe at almost all the reputed resorts of the Mediterranean littoral, while snow and frost are reported from not a few. At Orotava during the same period there has been unbroken brilliant weather, the sunshine averaging eight hours a day, the mean temperature 62°—the actual lowest temperature recorded being 49°. Owing to the enterprise of the hotel companies at Orotava the accommodation for invalids has recently been brought up to a high pitch of excellence. Neither as regards arrangements for comfort nor amusement is there anything lacking to meet every reasonable requirement.

I am, Sirs, yours faithfully,

FREDERICK LISHMAN, M.D. Edin.

Puerto Orotava, Teneriffe, Feb. 7th, 1907.

A LARGE VESICAL CALCULUS (18 OZ. 5 DRMS.) SUCCESSFULLY REMOVED BY THE SUPRAPUBIC OPERATION.

To the Editors of THE LANCET.

SIRS,—Anyone who has had to deal in this country or abroad with large vesical calculi must heartily congratulate Mr. H. Littlewood upon the success of his operation, as described under this heading in THE LANCET of Feb. 16th, p. 422, and upon the fact that the patient lived in very fair health for some nine and a half months after the operation. But when Mr. Littlewood states that so far as he can ascertain his is the largest stone which has been successfully removed, I feel constrained to refer him to your columns of Sept. 16th, 1893, where on p. 637 he will find an account by Mr. H. M. N. Milton of an Extraction by Laparotomy from the Human Bladder of the Largest Stone ever Recorded as Successfully Removed. This stone weighed 34½ ounces and now reposes at the museum of the Royal College of Surgeons of England, within a few feet of Mr. Littlewood's splendid specimen, and is numbered H 2 a. Mr. Milton's stone was removed in Cairo and its largest diameters were six inches and four inches. On the thirty-fifth day after the operation a second stone, weighing 23 grains, was removed from the bladder of the patient, who was about 60 years old, and he died from advanced kidney disease some two and a half months after the operation. The ultimate result was disappointing because he had gone through a period of apparent convalescence in the hospital garden. Even larger stones than Mr. Milton's have been taken after death from the human bladder.

I am, Sirs, yours faithfully,

F. M. SANDWITH, M.D. Durh.

Cavendish-square, W., Feb. 19th, 1907.

IDIOPATHIC CYANOSIS.

To the Editors of THE LANCET.

SIRS,—I read with interest the article on Idiopathic Cyanosis by Dr. Samuel West and Dr. T. Wood Clarke in THE LANCET of Feb. 2nd, p. 272, as well as your leading article in your issue of Feb. 16th, p. 443. In both articles reference is made to the case reported in your columns last July by Dr. G. A. Gibson of Edinburgh and myself. In the paper published on Feb. 2nd the writers state, with reference to our bacteriological results, that "these findings were not confirmed," while in the leading article of Feb. 16th the sentence "since they were unable to confirm these findings" occurs. I should like to know on what assumption Dr. West and the writer of the leading article base this statement. Neither Dr. Gibson nor I have as yet sent them any further information of our case and they are certainly not in a position to make any statements whatever regarding it.

Dr. West's paper makes full allusion to the literature on the subject, but I would point out that all these references occur in our communication.

I am, Sirs, yours faithfully,

CAIRSTAIRS C. DOUGLAS, M.D., D.Sc. Edin.

Glasgow, Feb. 19th, 1907.

GAS FIRES.

To the Editors of THE LANCET.

SIRS,—Will you allow me space for a short reply to Mr. J. H. Brearley's letter in THE LANCET of Feb. 9th, p. 385? He thinks he supplied me with information which should have prevented my criticising the Coal Smoke Abatement Commission's test, and he believes he supplied information to Dr. H. A. Des Vœux and Dr. J. S. Owens which enabled them to "deal more effectively with me than they might otherwise have done." I do not think the doctors were in need of his assistance and that is shown by the fact that they used my modification of the permanganate test which is described in the "Air of Rooms" *and nowhere else.* Clearly, therefore, they had my pamphlet in their possession and knew the size of my room and the details of my investigation. Mr. Brearley accuses me of concealing the size of my room, forgetting that its dimensions were given by me in the original paper and but for me would not be known to him or anyone else.

I am asked why I found the percentage of carbon dioxide higher when a gas fire was in use than with a coal fire, and this fact is taken as "conclusive proof that either the stove was defective or badly fitted, and no other evidence is necessary." But in this statement Mr. Brearley has forgotten that respiration was going on in the room in which my tests were made, and the problem with which I dealt included not only the carrying away of the products of combustion up the flue but also the extent to which the carbon dioxide due to respiration was removed from the room. The ideal ventilation would give us air in a room of the same purity as that outside, but everyone knows that this is practically unattainable in inhabited rooms. As Mr. Brearley does not trust my experiments I would refer him to the investigations on this subject by Angus Smith, Pettenkofer, Roscoe, Carnelley, Carleton Williams, Bedson, and others, not forgetting Dr. Des Vœux and Dr. Owens who found a very slight increase in the amount of carbon dioxide in the room as compared with the amount in the air admitted.

I am, Sirs, yours faithfully,

FRANCIS JONES, M.Sc., F.R.S.E.

Manchester, Feb. 9th, 1907.

A QUESTION OF PUBLIC POLICY.

To the Editors of THE LANCET.

SIRS,—The other night I was asked by a midwife to attend a case of hers which she thought was one of puerperal fever. As I do a large midwifery practice myself, doing between 160 and 170 cases a year, I absolutely refused. I do not see why I should run the risk of giving infection to any of my own patients or alternately having to give up my midwifery practice. In fact, I could not afford to lose four or five guineas a week to attend a case for which I would probably never get paid. I consider that if the State has created a class of so-called qualified practitioners it should also provide a hospital for these septic cases and a properly qualified man to attend them. I would like your opinion on the question and would likewise like to know what the custom is of practitioners in other districts. The question I need hardly say is a very important one for the general practitioner.

I am, Sirs, yours faithfully,

Feb. 17th, 1907. FORCEPS.

*** Our correspondent acted correctly. He would have been wrong to jeopardise his patients and wrong also to withdraw from attendance on them after they had secured his services. With reference to the pecuniary question, there should, of course, be provision for payment of medical men called in by midwives in accordance with the Act.—ED. L.

LITERARY INTELLIGENCE.—Dr. H. Charlton Bastian's just published work on the Evolution of Life is to be translated into French and published by Félix Alcan in the International Scientific Series.

THE PUBLIC ABATTOIRS OF GIBRALTAR AND MONACO.

(FROM OUR SPECIAL SANITARY COMMISSIONER.)

HOMBURG has a population of 20,000 and about 14,000 visitors who reside in the town for a few weeks each year in order to take the mineral waters. The population of Gibraltar is about 26,000 but the numerous visitors landing for the greater part from transatlantic steamers only remain for a few hours or at most a few days. Hence, roughly speaking, Homburg and Gibraltar have about the same population and I have described what under the strict German law has been done to provide a model slaughter-house for the benefit of the inhabitants of Homburg. The English law does not favour to the same extent the creation of similar institutions. But at Gibraltar the English law does not apply. Gibraltar is a Crown colony and its government is, practically speaking, a military autocracy. It is a fortress and the Commander-in-Chief or Governor can within the financial means at his disposal do whatever he thinks is best in the interests of defence. Therefore, in regard to slaughter-house accommodation the authorities at Gibraltar are not tied down within the limits of the English Public Health Act of 1875 or dependent on the favourable vote of ratepayers. Consequently it would be easier to attain the level of German excellence at Gibraltar than in some correspondingly small English town where local politics and finance might interfere with any such policy of perfection. The military authorities of Gibraltar and their civilian advisers have not, however, been stirred by any such ambition, though they have progressed at least to the extent of abolishing all private slaughter-houses. A few months ago when at Gibraltar I visited the public slaughter-houses. They are situated off the road to Catalan Bay on the level ground which is at the foot of the perpendicular rock known as the North Front. Here I found that the shed where the cattle are kept previously to slaughtering had been built so far back as 1861. Nevertheless, considerable care was devoted to its ventilation. There was an opening in the roof that went the whole length of the building and it was an iron roof. This must be inconveniently hot under the action of the sun but is not so likely to absorb and to retain living organisms as wood or other porous substances. Then, again, the flooring is concreted and this is likewise advantageous. There are close by two sets of slaughter-houses, one for the garrison and the other for the civil population. These consist of a group of low small masonry huts that may well have been built a century or more ago. But there is plenty of space round these huts. They are close to the Mediterranean shore and used to drain directly into the sea. This, however, caused a nuisance on the neighbouring beach, so now the slaughter-houses drain into the main sewer which passes under the North Front and thence to a Shone elevator. The disadvantage of the site chosen is its want of elevation, so that among other inconveniences it is necessary to collect the blood carefully otherwise it would form clots and block the sewers where there is but a slight fall.

Though the buildings are very small and in that sense unsuitable, some pains and ingenuity have been expended to make the best of them. Thus, the flooring is rendered impervious by the use of blue Staffordshire clay bricks. These are very small and require care and labour to clean but they are very good to prevent slipping. The walls have enamelled tiles to a height of five feet in the civil slaughter-house, while in the military slaughter-house the walls are cemented up to the same height. The tiles look best and seem cleaner, but for practical purposes the cement is doubtless as good. Indeed, it may be better, because tiles are liable to get loose and the joining together of the tiles may be defective. Where horned cattle are slaughtered there are an open ridge ventilation in the roof and windows in the walls on both sides. The method of killing is the same as in Portugal, the spine is divided at one blow from a dagger. In the military slaughter-house for hogs care is taken to hang the carcasses at some distance from the walls, so as to prevent the fat adhering to the surface. This precaution greatly facilitates the cleaning of the walls. Of late years the drain has been removed from the centre of the slaughtering sheds. The floor is laid so as to gravitate to the wall. Openings in the wall convey all the water and washing to gully traps outside the wall and immediately over the sewer which no longer passes under the building. This outside drainage in countries where frost is practically unknown and will not freeze the water in the syphon traps of the gullies is decidedly an improvement.

The hide-salting and tripe sheds are very elementary structures. They are not properly cemented, though I was assured that the authorities intend to render them waterproof. In the meanwhile these unsuitable premises are kept very clean and are constantly lime-washed.

The greater part of the horned cattle killed here are shipped from Galicia or from Morocco. The former are generally placed on board at Corunna and they are much finer cattle than those imported from Barbary; but as the latter live semi-wild lives in the open air and have no acquaintance with insanitary stables they are wonderfully free from disease. At Tangier there is a British agent to examine all the cattle before they are sent over the straits to Gibraltar, and it is very rare indeed that any of them are condemned. At the Gibraltar slaughter-houses a veterinary surgeon is sent for when any of the carcasses look at all suspicious, and if they are then condemned they are destroyed in the neighbouring destructor, though it is of an old-fashioned and somewhat effete model. Indeed, everything connected with the slaughtering and the preparation of meat at Gibraltar is old-fashioned, yet apart from the garrison and the civil population many passing ships stop here to coal and also to purchase large supplies of meat. It is, therefore, quite time that Gibraltar should have a slaughter-house with all the perfected appliances such as exist at Homburg.

From Gibraltar to Monaco is not so far a cry as it may seem at first sight. Both towns are built on a precipitous rock jutting out into the Mediterranean; both places have about the same number of inhabitants, and both populations live under autocratic governments. Furthermore, both these autocratic administrations are dissatisfied with the existing slaughter-houses and recognise the necessity of building something more modern and in keeping with the recent developments of science. But it is very obvious that Monaco has the advantage over Gibraltar. The site chosen at Monaco is much more suitable. It is as if the Gibraltar slaughter-houses had been built on a ledge of hard rock some 30 feet immediately above the sea right away at the extremity of Europa Point. At the far end, on a ledge and near the foot of the magnificent and perpendicular red rock on which the antique town of Monaco was constructed, is situated the slaughter-house of the principality. On three sides it overlooks the sea, and on the fourth side there is a perpendicular rock which can only be ascended by means of zigzag steps that have been cut out of the stone. It would be impossible to conceive a more isolated position or a place better swept and purified by the strong sea air. On one side there is a carriage road round the foot of the rock and along the port or Bay of Hercules and from there to the Monaco railway station, where the cattle arrive.

The horned cattle are usually purchased at Nice where they have three days' rest before proceeding to Monaco, which is only 15 miles away. A good many of the bullocks come from the Garonne, and in the slow cattle trains it is a three days' journey to Nice, so that rest is very essential on arrival. Indeed, in the stables of the Monaco slaughter-house I saw one of these bullocks with bloodshot eyes which suggested that it had not yet recovered from the feverish fatigue of the long journey. The stables are too small and at times are overcrowded. There are through ventilation and cemented floors with indentures or fluting to insure the rapid flow of all liquids to the drain. About a third of the meat consumed in the principality is imported. The best mutton comes from Paris and the veal from Vichy. As the extra demand arises in the winter season, when such crowds flock to Monte Carlo, the meat can travel in ordinary wagons and is not exposed to the flavour-destroying process of cold storage.

The slaughter-house consists of two main buildings. The one nearest to the rock is used for stabling purposes. Then there is an open court with another building overlooking the sea in which the slaughtering is done. In the latter the compartments allotted to the different butchers are not absolutely private, for the partitions are only about breast high. Therefore this is a sort of cross between the condemned system of private compartments and the modern open and large slaughter-hall. The idea of separate compartments is

maintained, but it is possible to see from one compartment to the others. There are large windows and the floors are easily drained and washed. The sewer of the slaughter-house is within a few yards of the outfall directly into the deep sea. There is no connexion with the general sewers, as the slaughter-house is at the farthest point out into the deep sea. Also, as the terrace on which the slaughter-house stands is a ledge of the high rock rising in a perpendicular manner from the sea, the contents of the pouches, of the intestines, and the offal generally can be thrown directly into the water, for there is no tide and the water is deep. Indeed, there is at this point one of the sewer outfalls from the old town above, and it was here also that the house refuse used to be thrown into the sea before a destructor had been built.

Apart, however, from the great convenience of the position the general state of affairs at this slaughter-house is absolutely primitive. The fittings are of the most elementary character and there are no appliances for the cutting up and dressing of the carcasses. A bullock's carcass when hung up cannot be moved from the place where it hangs. The contents of the intestines are placed in a wooden bucket or cask that is not even on wheels but has to be lifted in men's arms and carried to the place where its contents can be tilted into a hole about a foot in diameter. Of course, being of wood it can never be efficiently cleaned. The hole destined to receive the filth and offal communicates with an iron sewer-pipe that descends vertically into the slaughter-house sewer, which has its outfall into the sea just underneath. Here the white foam of the blue Mediterranean beats upon the pink rock of Monaco. Some 300 feet straight above the grey battlements of the ancient fortress recall a military past, while the high and majestic walls of the new Oceanic Museum testify to the pacific and modern triumphs of science. It is quite certain that such an ancient and unscientific slaughter-house cannot remain long close to the wonderful museum which Prince Albert is building just above. For instance, there is no proper apparatus for dealing with hogs. When a pig is killed the carcass is placed in a wooden trough and some boiling water is poured over it so that the bristles may be more easily scraped off. If hot water is required each butcher must light his own fire and boil water in a little boiler constructed somewhat on the same lines as the boiler in the scullery of an English workman's cottage, which is used on washing days. Fortunately, there is no tripe-dressing here. If any meat is condemned and has to be destroyed the process is, to say the least, somewhat peculiar. Near the sewer outfall there is a cemented cesspit. Here the condemned carcasses are placed and covered with quicklime; then occasionally the decomposed contents of this cesspit are pushed out into the sea. But perhaps the fact that there is no general hot water-supply in this slaughter-house is sufficient and speaks for itself. Nevertheless, what a glorious position this slaughter-house occupies; how complete its isolation and pure the surrounding sea air. This covers a multitude of minor sins which may easily be forgiven and forgotten in virtue of this unique advantage.

The slaughter-house was built in 1886 and the debt then contracted has not yet been completely paid off, yet a much larger sum will now be needed to build a modern abattoir. It is said that the butchers cannot be expected to contribute to this outlay because the sale price of meat is fixed by Government decree and they already pay a large sum for the use of the slaughter-house. This I was told amounted to 20 fr. 40 c. for killing a bullock, 5 fr. 25 c. for a calf, 1 fr. 75 c. for a sheep, 3 fr. 25 c. for a hog, and 75 c. for a lamb. On the other hand, beef of the first quality must not be sold dearer than 1 fr. 80 c. the kilogramme, or about 9*d*. per pound. The choice pieces, however, may be sold at 2 fr. 20 c. the kilogramme or 11*d*. per pound. Veal of first quality is ½*d*. per pound cheaper, but the choice pieces are about 1*s*. per pound, and the first quality of mutton is 11*d*. per pound and pork 10*d*. per pound. It is not, however, necessary to give the full list of prices, the principle involved is the interesting factor. In this respect, speaking to the proprietor and manager of a hotel, I found that he did not think this law was effective. The butchers very generally charged more than the tariff price. Certainly anyone so charged could fetch the nearest policeman and the butcher would then be prosecuted and punished. But it would fare ill with such a customer and he would ever after find it difficult to get promptly and satisfactorily served. My informant thought the fact that meat could be imported into the principality from Nice and other places did more to keep down the price charged by the Monaco butchers than the Government decrees.

The slaughtering and the meat trade of the principality are regulated by the police ordinance of June 6th, 1867, and Article 472, No. 13 of the Penal Code. It is therein enacted that no animals shall be slaughtered elsewhere than in the public slaughter-house. Thus, and for a long time now, the abomination of private slaughter-houses has been abolished in the principality. The same ordinance stipulates for the examination of every animal and its seizure and slaughter if diseased. Then no meat is to be sold unless it bears a black stamp with the number 1, 2, and 3, according to whether the meat is of first, second, or third quality. This seems to be an excellent regulation, as obviously a more impartial judge than the butcher himself should decide as to which quality or category the meat belongs. All meat imported must be taken to the slaughter house and there examined and marked according to its quality before the retail butcher can be allowed to expose it for sale. Of course, if any of this imported meat should be spoilt or not fresh it is destroyed by the authorities. All skins, tripe, horns, and fat must be removed from the slaughter-house every day and manure every other day. Goats must be more than 20, lambs 30, and calves 40 days old before they are slaughtered for food. Butchers must not leave the slaughter-house till they have thoroughly cleansed the premises; and, from what I was able to see, this rule is well observed. The meat can only be conveyed from the slaughter-house to the butchers' shops in closed vehicles. Then there is a decree of Jan. 20th, 1888, which says that the veterinary surgeon intrusted with the inspection of the markets and shops must live in the principality and inspect the entire premises of the slaughter-house every day so as to see that all is kept clean and to seize all unwholesome meat and unhealthy animals. All the shops where food is sold must be constantly inspected and the veterinary surgeon must also visit every stable in the principality at least once in the course of the year and see to the health of the animals living therein. This latter clause is quite a special enactment. It places all animals and all stables under the surveillance of a qualified veterinary surgeon and must have a very beneficent effect, not only from the point of view of the health of man and beast, but also in the prevention of cruelty to animals. The principality of Monaco is in most things prompt to apply all modern improvements, but it must be confessed that in regard to its public slaughter-house it is not on a level with modern developments. On the other hand, it must also be stated that the Government is fully cognisant of this fact and determined to build a new and model slaughter-house as soon as possible.

BIRMINGHAM.

(FROM OUR OWN CORRESPONDENT.)

The University.

THE annual report of the Council of the University recently presented at the annual meeting of the governors is no less interesting than many of its predecessors and it serves to give the supporters of the University a general idea of the past progress and the future needs of the institution. So far as progress is concerned, there has been a continuous advance in the number of students attending all the faculties except that of medicine. In the latter there has been a fairly steady decline since 1903 up to the end of the period embraced by the report (1905–06), but the treasurer, in drawing attention to this, pointed out that the entry of students in the medical faculty for 1906–07 was greater than it ever had been since the University was founded and he expressed the hope that, in view of the increased facilities which are now provided, the increase will continue. The advance in the number of the students as a whole has been coincident with the increased advantages offered to them, and the progress that has been made in the establishment of new laboratories, new professorships, and new lectureships is certainly very remarkable. The accommodation provided for the teaching and study of the applied sciences at the new buildings at Bournbrook is magnificent and quite eclipses that provided at any other British university. Naturally the provision of all the advantages now offered has been very

expensive and the upkeep is costly. Moreover, it must necessarily increase if progress is to continue, but although the advantages offered to the students have been greatly increased the fees charged have remained the same. It is contemplated, however, that the low fees hitherto charged will have to be increased to a more reasonable amount, and apparently there will be no difficulty in obtaining higher fees, for the demand for accommodation is rapidly becoming so great that even the new laboratories will not be able to meet it. Yet even if the fees are raised, and raised without diminishing the entry, the amount so gained will be comparatively small and it will in no way suffice for the increasing requirements. Other means will have to be found and more money provided before long unless the usefulness of the University is to be seriously impaired. Money is needed now, and will be still more needed shortly, alike for endowment, to meet standing expenses, and for purposes of further expansion, and it is to be hoped that donors will see their way to place what they give entirely at the disposal of the council without ear-marking it for special purposes. Specially devoted gifts frequently cause additional standing expense without providing any means whereby that expense may be met, for under existing conditions it can never be met by increase of students. The Principal struck the right chord when he said that the community at large should not look upon the money it gave to provide higher education in the light of giving charity. "There was no charity in the matter. There was only the natural responsibility of one generation to the next and of the whole community for those who were going to serve it on a high level in the future."

Tuberculosis and Milk-supply.

Our health committee has been attempting to discover by means of the examination of numerous samples what sources of milk-supply are infected with tubercle and definite results have been obtained; indeed, so definite that one farmer has already been requested to destroy a cow the milk of which was proved to be contaminated with tubercle, and it is believed that a similar course will be taken with the owners of other infected animals. The medical officer of health (Dr. J. Robertson) has suggested that there should be a thorough systematic examination of the cowsheds in rural districts, such as is now carried out in the city, and a regular inspection of cows by a special official who should be provided with power to order the destruction of diseased animals. It is further suggested that compensation should be paid to the owner only up to half the value of the animal destroyed, and it is hoped that the knowledge that he will have to bear half the loss will make him more diligent in providing and maintaining satisfactory quarters for his animals.

Midwives and Parish Medical Officers.

Midwives attending to necessitous cases have at times had difficulty in obtaining medical assistance, for it has not been the custom for medical men to attend cases merely on the report of the midwife that the patient is unable to pay the usual fee. The difficulty has been so great and the results have been so serious that the matter has been brought before the health committee. After careful consideration it has been decided by the guardians that their medical officers shall be instructed to attend cases of difficulty at the request of the midwife in charge and without an order from the relieving officer. It is of course understood that the midwife shall only call for medical help when it is absolutely necessary and when she is satisfied that the patient cannot pay, and the medical officers are to act at once, leaving the guardians to decide afterwards whether the patient was able to pay or not.

Diphtheria at Hatton.

A rather serious outbreak of diphtheria has occurred at Hatton and has necessitated the closing of the school. Apparently the sanitary conditions of the place are not satisfactory, but the medical officer of health of Mid-Warwickshire (Dr. George Wilson) has not been able to localise any definite source of infection. The sewage outfall from the asylum appears to be suspected as a source, and numerous cases of sore-throat have been reported from houses in the vicinity of the outfall. It appears, however, that the sanitary arrangements at the school are also defective and both the possible sources of trouble are to be remedied. It is a pity that the need for the greatest care in sanitary matters is so often only forced home in so many cases by disease and death.

The Health Report of Castle Bromwich.

Dr. A. Bostock Hill's annual report on the health of this rural district shows that definite progress is being made. The death-rate for the year has been reduced to 9·65 per 1000. This includes a reduction of the zymotic death-rate to 1·3 per 1000, which it had previously exceeded. The diphtheria cases of the district occur mainly in the neighbourhood of the sewage farm and it is hoped the increased use of bacteria beds will be followed by a reduction in the number of these cases. Dr. Hill makes a special point of the fact that the birth-rate has risen during the year from 20·0 to 25·51 per 1000.

Feb. 19th.

WALES AND WESTERN COUNTIES NOTES

(FROM OUR OWN CORRESPONDENTS.)

Cardiff Infirmary.

THE Cardiff corporation has subscribed for many years to the funds of the infirmary. The money has not always been voted without some discussion, often of an adverse character, and on the last occasion it was suggested by a few members of the city council that some representation on the governing body of the infirmary should be claimed by the corporation in return for the subscription, which is at present 200 guineas annually. At the last meeting of the board of management of the infirmary it was decided to submit to the annual meeting of the governors such alterations of rules as would admit of the corporation being represented on the board of management. Although it was contended by some that several members of the board were also members of the corporation, it was eventually decided to recommend that during the continuance of the yearly grant the corporation should have five seats on the board.

Health Report of Cardiff.

In his preliminary report on the health of Cardiff during 1906 the medical officer of health (Dr. E. Walford) states that the birth-rate was 27·2 per 1000 and that the death-rate of 14·2 per 1000 was the lowest rate recorded since 1852.

Municipal Motor Wagons.

The household and trade refuse of Cardiff is deposited on "tips" on the outskirts of the town. As the inhabited bounds of the borough are every year getting farther and farther from the centre the difficulty of obtaining suitable land for depositing the refuse increases. The greater distance for cartage adds, moreover, very considerably to the cost of dealing with the refuse. When the city engineer suggested two years ago that motor wagons should be used for the purpose of carting away this refuse it was confidently expected that there would be a considerable saving compared with haulage by horses. It appears, however, that these anticipations have not been fulfilled and it has been decided to return to horse haulage except in the case of one depôt situated at some distance from the point of collection and for which two motor wagons will be retained. In the large towns of South Wales refuse destructors have not been so generally adopted as they have in industrial towns elsewhere. Whenever the proposal to erect one in Cardiff has been made the great initial cost has been sufficient excuse for postponing the project. It is pretty certain, however, that the question will have to be faced before long. In Swansea the refuse is got rid of partly by means of a destructor and partly by sending it out in barges and discharging it into the sea. It is not quite correct perhaps to say that it is got rid of by being discharged into the sea, for during the past few months many complaints have been made by the inhabitants of Aberavon, a town situated on the Swansea bay, that much of the barged refuse from Swansea is washed up on the Aberavon beach. For some time the Swansea corporation contended that this was impossible, but it has now had to admit that it was mistaken, for certain marked packages which were purposely thrown overboard from the refuse barge were subsequently found upon the Aberavon beach.

Health Report of Dolgelly.

In his annual report to the Dolgelly urban council (North Wales) Dr. Hugh Jones, the medical officer of health, states that the birth-rate during 1906 was considerably below the average for the United Kingdom and that there was also a

substantial decrease of mortality in 1906 as compared with 1905. The infantile mortality was slightly below the average for the rest of the country. Dr. Jones said that the great problem for the infant was a proper milk-supply, and THE LANCET, in its articles on the subject, had wisely said that the only proper milk-supply was that which was derived from the mother's breast. The zymotic death-rate was 1·2 per 1000 living as compared with 0·28 per 1000 in 1905. There were 79 cases of scarlet fever and the price of neglect was paid in a protracted outbreak. The local authority was still without the means of isolation and disinfection, although the provision of a small isolation hospital and disinfecting apparatus had been pressed upon them since 1888. There was a very marked preponderance of feeling among the ratepayers against an isolation hospital and this feeling was not confined to the uneducated portion. Nothing equal to the site generously offered as a gift by Mrs. Vaughan, Nannau, would now be at the disposal of the district. The recent epidemic was simply the old story of starting with one or two cases which increased owing to want of means of isolation.

Barry Town Accident Hospital.

The Barry Town Accident Hospital is supported by the local rates and a grant is also made by the committee of the Royal Hamadryad Seamen's Hospital, Cardiff. Certain members of the local medical profession give their services voluntarily to the institution. At a recent meeting of the Barry district council a communication was read from several local medical men complaining that the medical staff of the hospital constituted a "close corporation," and the letter added that although four vacancies had occurred at the institution no steps had been taken to fill them. The Barry council after some discussion considered that there was an apparent hardship upon those medical men who were not allowed to give their services to the hospital and decided to refer the subject for consideration to the hospital committee and also to the members of the medical profession in the town.

Feb. 19th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Cerebro-spinal Fever in Scotland.

THE disease continues to extend in spite of all possible precautions being taken. Fresh cases are reported from Paisley, Kirkintilloch, Calderbank, Haddington, Kirkaldy, Musselburgh, Stirling, Forfar, and Wishaw. The latest figures with regard to Glasgow show that 12 cases were intimated on Feb. 18th and eight on the 19th. In Edinburgh from the beginning of the outbreak 27 cases with 18 deaths have been reported. The supposed case of an assistant steward on board a Leith steamer proceeding to Hamburg suggests how readily the disease may be spread from place to place.

The Royal Medical Society, Edinburgh.

A meeting of this society was held on Feb. 15th, Dr. A. M. Drennan, the senior President, being in the chair. A paper on the Etiology of Ovarian Tumours was contributed by Dr. Turnbull. A debate followed on the motion that "the present fall in the birth-rate is a menace to the State and therefore steps should be taken to decrease the infantile mortality." The motion was carried by a large majority.

The University of Glasgow.

At the University of Glasgow a lectureship has just been established in Applied Anatomy and this week it is announced that Dr. Robert Kennedy, M.A., D.Sc., M.D. Glasg., has been appointed lecturer. The course, which will be held during the summer session, is intended for graduates and senior students.—At a meeting of the University court last week it was intimated that the Privy Council had approved of the University ordinance instituting a science degree in pharmacy in the University of Glasgow.

Mentally and Physically Defective Children in Glasgow.

Not the least interesting reading in the annual report of the Glasgow school board just issued is that part dealing with the education of mentally and physically defective children. Mentally defective children have been taught during the year at seven different schools, and arrangements have been completed for commencing additional classes at two other schools. The instruction is given by 18 specially trained teachers, and the number of pupils in attendance at November was 284. As regards physically defective children special facilities for carrying on their education are provided at four different schools. A wagon is attached to each school and the children are accompanied by a trained nurse both to and from the schools every day. The total number of physically defective children in attendance at November was 187.

The Association for the Relief of Incurables.

The directors of the Association for the Relief of Incurables in Glasgow and the West of Scotland have just issued their annual report. At the close of the year there were 115 patients in the Broomhill Home. It is interesting to note that during the year only eight deaths occurred, while, on the other hand, three of the patients in the home have each completed 30 years' residence and two others within the next few months will complete a like period. The report also states that the Lanfine Home for Incurable Consumptives is serving a valuable and beneficent purpose. During the past year there were 23 admissions and 21 removals. Of the latter no fewer than 14 were through death, but four patients were able to leave improved and three others returned home. These changes left 15 inmates at the end of the year. Like most benevolent societies dealing with the sick, the statement of accounts unfortunately shows that the expenditure exceeded the income in this case by £1030. It is satisfactory to note, however, that the ordinary expenditure of the year was £184 less than that of the preceding year.

Feb. 19th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Cerebro-spinal Fever in Dublin.

Sir Charles Cameron, superintendent medical officer of health of the city of Dublin, reported on Feb. 15th that an infant had died on the previous day from cerebro-spinal fever. A child, aged eight months, became ill in Clarendon-street on Feb. 17th and died within an hour. Dr. J. M. Day, of Cork-street Fever Hospital, pronounced the case to be one of cerebro-spinal fever. Eight cases have therefore occurred in Dublin, with six deaths, by the date on which I write. The public health committee has issued a circular of warning to the public, mainly addressed to parents. In Belfast things are far more serious and an attempt should be made to ascertain by what means the disease was conveyed from that city or from Scotland to Dublin. Sir Charles Cameron has replied to this suggestion when it was made in the press, saying that every effort to trace the origin of the disease here had failed. None of the patients or their families could in any way be connected with Belfast or Glasgow or with persons or things from those cities.

Apothecaries' Hall of Ireland.

The annual dinner was held in Dublin on Feb. 9th. Dr. F. G. Adye-Curran, the governor, presided and was supported by the deputy-governor, Mr. G. R. Seymour Stritch. Several members of the court of directors and examiners were present, as were also many prominent guests. The governor said that it had been his ambition and that of his colleagues to uphold the dignity of the Hall, and, if possible, once more to restore it to the proud and important position it once held in their midst. The qualification granted was most comprehensive, fully qualifying the holder in medicine, surgery, and midwifery, and accepted alike by all the services. He held in his hand the list of successful candidates at the recent examination in London for the Indian Medical Service. The Irish element was sadly deficient there and the same remark applied to the recent examination of the Royal Army Medical Corps. There were 23 successful candidates with only two from their side of the water, whereas in former times the army medical officers were more than half Irish. Was it that medical education was defective in Ireland, or was the want of university education the cause? He left it for them to decide. The matter should be carefully investigated and a remedy, if possible, suggested. He hoped that in the revolution in university education in Ireland the interests of the Apothecaries' Hall might be safeguarded.

The Government Inquiry into the Public Health of Belfast.

The Government has decided, in response to a request made to the late Chief Secretary (Mr. Bryce) in October last by an influential deputation of citizens, to hold an inquiry into the causes of the high death-rate of Belfast, and generally into the public health administration of the city. The following are the Commissioners appointed: Colonel Harding (formerly Lord Mayor of Leeds), chairman; Dr. A. K. Chalmers, medical officer of health of Glasgow; Dr. L. W. D. Mair, medical inspector of the English Local Government Board; Mr. P. C. Cowan, M.Inst.C.E., engineering inspector of the Irish Local Government Board; and Surgeon-Colonel D. E. Flinn, F.R.C.S. Irel., medical inspector of the Irish Local Government Board. These Commissioners are authorised to inquire into: (1) The cause or causes of the high death-rate of Belfast; and (2) the administration by the several authorities charged therewith of all general Acts and Orders relating to the public health and the prevention of disease and of all provisions of local Acts connected with the same or similar matters, and of all other Acts and Orders, whether general or local, which directly or indirectly affect the public health of the city. It will be seen that the Commission is a strong one and that its terms of reference are very wide. Nothing but good will come of a thorough inquiry into the condition of public health in Belfast. The mortality statistics of Belfast certainly justify the institution of an extraordinary inquiry. At the last weekly meeting of the public health committee it was reported that the death-rate of Belfast for the week ended Feb. 9th had, from all causes, reached the truly alarming rate of 27·2 per 1000.

Cerebro-spinal Fever in Belfast.

The epidemic of cerebro-spinal fever continues to make progress, not alone in Belfast, but in the surrounding districts, and up to to-day (Feb. 19th) 95 cases have been notified, with the frightful number of 50 deaths. The disease has also spread to Monaghan, Lurgan, Larne, and Saintfield. So far the results from the serum sent from Berne to Belfast have been negative and there are fears lest the disease should become rampant in all parts of the city.

Feb. 19th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

The Admission of Foreigners to Medical Degrees.

ON Dec. 20th, 1906, after receipt of a report from the Minister of Public Instruction, the President of the Republic sanctioned a regulation applying to the conditions under which medical men and medical students of foreign nationality may obtain medical qualifications in France. If as foreigners they have been admitted as candidates for a university degree in medicine and afterwards become naturalised they may, with the consent of the medical and pharmaceutical section of the *comité consultatif* of public instruction, be excused a part of the examination for the State diploma of doctor of medicine, provided that they qualify for the *baccalauréat de l'enseignement secondaire* or for the degree of *licencié ès sciences*. The subjects of examination will not in any case be more than three. Candidates who in the opinion of the *comité* did not obtain sufficient marks at the examinations for the university degree will have to present themselves for these examinations a second time.

Epidemic Typhoid Fever due to Oysters.

On Feb. 5th M. Netter, M. Brian, M. Latouche, and M. Ribadeau-Dumas communicated to the Academy of Medicine an account of 120 cases of various infectious diseases, of which 33 were cases of typhoid fever due to eating oysters coming from Cette. All the cases of typhoid fever came under observation within a period of four months, they occurred at different places widely separated the one from the other, and all the patients had eaten Cette oysters. Most of the cases began with diarrhœa, and a definite diagnosis of typhoid fever was made, as a rule, between the eighteenth and the thirty-sixth day of the disease. The fever was of a grave type and seven cases out of the 33 were fatal. Some of the cases closely resembled acute tuberculosis. A study of the different foci of the disease showed similar facts—i.e., in one family, if there were two or three persons who had not eaten the oysters, they were not attacked, while those members of the family who had eaten them were attacked. The epidemic was evidently due to the oysters, and besides the dangerous condition of the oyster beds of Cette has been known for long. Some years ago an inquiry was carried out by M. Mosny who proposed that certain measures should be taken. Nothing was done, however, on the pretext that the Cette oysters did not contain the bacillus of Eberth, which is not the fact. M. Chantemesse reminded the academy that attention had been already drawn to the dangers of Cette oysters in a paper by M. Cornil. The academy nominated a committee of five members to inquire into the matter.

The Hygiene of Barracks.

The Under Secretary of State for War, M. Chéron, has just been paying a visit to M. Roux, the Director of the Pasteur Institute, who is also president of the hybrid (*mixte*) committee of hygiene of the War Department. M. Chéron's object was to acquaint M. Roux with the result of his visits to barracks and military hospitals and the two officials had a long conversation upon the work of the committee over which M. Roux presides and upon general questions of military hygiene.

Hygiene in Mines.

The Minister of Public Works, Posts, and Telegraphs has just appointed a special commission to investigate questions connected with hygiene in mines. The commission consists of 14 members and moreover has for its secretary (who also has a right to vote) M. Fuster, the general assistant secretary of the International Congresses on Accidents to Workmen and Assurance (*Congrès Internationaux des Accidents du Travail et des Assurances Sociales*).

Feb. 18th.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Jubilee of Professor von Schrötter.

THE seventieth anniversary of the birth of Professor von Schrötter was recently celebrated in an impressive manner not only by the medical faculty but also by a large number of the general public. The attainment of the Biblical span of life means more with the university teacher than it does with ordinary mankind, for a law is in force, in spite of all the endeavours which have been made to overthrow it, requiring the teacher to retire on completing his seventy-first year. The jubilee celebrations were therefore in some degree also a farewell. All the leading men of the medical faculty, together with representatives of the Government and numerous friends and pupils of the hero of the occasion, assembled in his lecture room. The laryngological societies of Berlin and of London conferred their honorary membership on Professor von Schrötter, and Professor Fränkel of Berlin in a brilliant speech enumerated his achievements, saying that he was, with Türck and Czermak, a pioneer in laryngology. Dr. Thost of Hamburg, who spoke in the name of the Society for the Prevention of Tuberculosis in Germany, extolled his merits as the foremost European advocate of the sanatorium and open-air treatment of consumption. He said that nothing less than a complete map of the world would suffice to mark all the spots where Schrötter's name and fame were known and praised. In his reply Professor von Schrötter said that the progress of medicine during the 40 years for which he had held the post of professor of laryngology and internal diseases had been enormous and that it had fallen to his lot to add a few leaves to the splendid tree of knowledge. The latest addition to the ranks of the profession—namely, the advent of the female doctor—was, in his opinion, not an advantage, as it turned women aside from following their natural destiny. Due homage was paid by the speaker to Skoda, whose pupil he was. Professor von Schrötter will no doubt be asked to continue his professorship for another year, the so-called *Ehrenjahr*, which the law allows in the case of eminent septuagenarians.

Regulations as to Teaching by Privat-docenten.

In Vienna the number of medical men entitled to style themselves *privat-docent* is upwards of 200—i.e., about 8 per cent. of all the members of the medical profession in the city. They are nominally obliged to deliver at least 20 lectures every year between October and July and it is from among them that the extraordinary professors are

generally elected. As this title not only carries special honour with it but also implies better fees it is naturally much coveted. On the other hand, the Government department to which the right of conferring these titles belongs is of opinion that the *privat-docenten* ought to fulfil their statutory obligations as teachers. All of them, therefore, as well as the medical bodies of all the universities, have been informed that in future every medical *privat-docent* will have to furnish proof to the Ministry of Education that he has complied with the regulations as to teaching. Any *privat-docent* failing to show that there was sufficient reason for his not lecturing for a period of three semesters will be reminded of his duty, and if he should not rectify the omission during the next semester his title will be taken away from him. A course of lectures is considered sufficient if at least three students attend it and if the lectures are at least 20 in number. The intention of the authorities is obviously to remove from the list of *privat-docenten* all such as either on account of age or active medical practice are not disposed to devote their spare time to university work.

A Case of Goitre in a Dog.

Professor Wagner von Tauneregg, who has made the study of endemic goitre his specialty, has turned his attention to the incidence of goitre and idiocy amongst the lower animals. At a recent meeting of the Vienna Medical Society, he showed a dog which had been suffering from hypertrophy of the skin tissue and whose mental activity was very deficient as compared with that of other dogs of similar breed. It could hardly follow a man in the street and it never recognised its master. Its food had to be given to it and its metabolism was very slow. It passed urine not more than once in 24 hours, whilst other dogs are noted for the ever-present desire to micturate at every street corner. The body of the cretin dog was short and plump and its nose and legs were thick and short, whilst a brother and the mother of the dog were slender, active, and quick-witted creatures. Another very important feature was that the dog never curled up or wagged its tail, but kept it between its legs and was in the habit of sitting on it, so that it was much rubbed and had hardly any hair on its dorsal aspect. Professor von Tauneregg resolved to treat the animal with thyroid tablets and within eight months the results were so remarkable that he showed it again to the society. The dog could hardly be recognised. It now took an interest in its surroundings, it had increased in size, and its body was more proportionate than formerly; its appetite, thirst, and metabolism were as normal as those of any other dog. The most interesting change, however, appeared in the tail, which was now carried erect and was bushy, with thick, silky hair. A portion of the thyroid gland, which had been excised and examined, showed little difference from a normal thyroid gland except that all the alveoli were full of colloid substance as in goitre. The effect of treatment with thyroid tablets proved that the importance of the gland depended chiefly on its internal secretion, and this factor could not be gauged by the anatomical or microscopical appearance of diseased or normal glands.

The Sequelæ of Scarlet Fever.

At a recent meeting of the Society for Internal Diseases Dr. B. Schick read a paper on the complications or sequelæ of scarlet fever. He said that clinical observation showed that there were two distinct groups to be kept in mind—namely, scarlet fever itself and its complications on one hand and scarlatinal nephritis on the other hand. The most remarkable feature of this nephritis was the interval, unattended by special symptoms, between it and the primary disease. From one to three days before the symptoms of nephritis declared themselves the cervical and submaxillary lymphatics became swollen and painful, and this lymphadenitis was a well-defined and important complication of scarlet fever, attaining its maximum development in the third or fourth week after the commencement of the illness; the earliest and latest dates on which it was observed in a series of 1700 cases in the Vienna Children's Hospital were respectively the twelfth and fortieth day of the illness. In addition to nephritis and lymphadenitis, other sequelæ of scarlet fever were endocarditis, rheumatic affections, and fever without apparent cause. It has not yet been ascertained whether these sequelæ owe their origin to special micro-organisms or to the supposed micro-organism of scarlet fever.

Feb. 18th.

EPIDEMIC CEREBRO-SPINAL FEVER.

THE returns of the Registrars-General for Scotland and Ireland show a marked continuance of the fatal prevalence of cerebro-spinal fever in several of the Scotch towns and in Belfast during the week ending Feb. 16th. In the principal Scotch towns 36 deaths were referred to this epidemic disease in Glasgow, the numbers in the two preceding weeks having been 16 and 24. Three fatal cases of this disease were also returned in Edinburgh, in Paisley, and in Leith, and one in Dundee. In the Irish towns 12 deaths were referred to this cause in Belfast, a decline of two from the number in the previous week, and two fatal cases were also reported in Dublin.

Since that date the disease has progressed markedly in Scotland, fresh cases have been announced in Ireland, and evidence accumulates that the infection has reached England. Our local correspondents in Ireland and Scotland show that every precaution is being taken in the serious state of affairs. In England cases are reported from Liverpool, Wolverhampton, Longton, Workington, and one or two other places, but medical information does not confirm several examples reported in the newspapers. Three cases diagnosed as cerebro spinal fever have made their appearance in London, which has led to an opportune declaration on the part of the chairman of the Metropolitan Asylums Board that the Board is prepared to deal with an epidemic.

On Wednesday, Feb. 20th, the Local Government Board published, as a circular to the various medical officers of health, to the town and borough councils, and urban and rural district councils, a Memorandum on Cerebro-spinal Fever, prepared in 1905 by Mr. W. H. Power, principal medical officer to the Board. Mr. Power, after pointing out that cerebro-spinal fever is not of rare occurrence in the United Kingdom, adopts the late Dr. Netten Radcliffe's definition of the disease in the following words: "An acute, epidemic disease, characterised by profound disturbance of the central nervous system, indicated at the onset chiefly by shivering, intense headache or vertigo, or both, and persistent vomiting; subsequently, by delirium, often violent, alternating with somnolence or a state of apathy or stupor: an acutely painful condition with spasm—sometimes tetanoid—of certain groups of muscles, especially the posterior muscles of the neck, occasioning retraction of the head; and an increased sensitiveness of the surface of the body. Throughout the disease there is marked depression of the vital powers; not unfrequently collapse: and in its course an eruption of vesicles, petechial, or purpuric spots, or mottling of the skin is apt to occur. If the disease tend to a recovery, the symptoms gradually subside without any critical phenomena, and convalescence is protracted: if to a fatal termination, death is almost invariably preceded by coma. After death the enveloping membranes of the brain and spinal cord are found in a morbid state, of which the most noticeable signs are engorgement of the blood-vessels, usually excessive, and an effusion of sero-purulent matter into the meshes of the pia mater and beneath the arachnoid." To the clinical manifestations of the disease, indicated in this definition, may be added the presence of Kernig's sign and of *tache cérébrale*.

Mr. Power's circular continues:—"Local prevalence of a malady distinguished by the foregoing features would, it may be presumed, lead to early recognition of its true nature. But, while these features are characteristic of cerebro-spinal fever of typical and severe sort, experience has taught us that this fever may, and does, appear in milder or in anomalous forms which render identification difficult and which lead to its being mistaken for other ailments of more common occurrence in this country. Illustration of this is afforded by certain localised outbreaks of cerebro-spinal fever in the eastern counties in 1890, where this disease was generally mistaken for sunstroke or for enteric fever, or was looked upon as a new form of illness; by the prevalence of what would seem to have been cerebro-spinal fever in Northamptonshire in 1890-91, where the malady was for the most part diagnosed as pneumonia or as sore-throat; and by the occurrence of cerebro-spinal fever in Irthlingborough in the present year, where many of the persons attacked were regarded as suffering from influenza. In these anomalous forms of cerebro-spinal fever, many or even most of the symptoms associated with the recognised type of the disease may be absent,

while, in mild cases, they may be so slight or of such brief duration as to escape notice. It is, however, for such cases that it is necessary to be on the outlook, whether in relation with a definite occurrence of cerebro-spinal fever in a locality, or by reason of the prevalence in a particular neighbourhood of illness not clearly referable to definable cause. In these circumstances there would be advantage in the local medical officer of health endeavouring to secure, by arrangement with the medical men practising in his district, information as to the existence of cases of the kind in question.

Failure to recognise cerebro-spinal fever is also apt to happen when the malady is of the 'fulminant' variety, in which death ensues rapidly. In these instances the disease has been mistaken for typhus fever, idiopathic tetanus, or malignant measles.

An important aid to diagnosis may be found in examination of cerebro-spinal fluid, withdrawn from the lower part of the spinal canal by lumbar puncture, for the presence of the 'diplococcus meningitidis intracellularis' of Weichselbaum; a micro-organism which is now generally regarded as the specific cause of cerebro-spinal fever.

Whether cerebro-spinal fever is spread by direct infection from person to person is matter of uncertainty; indeed, there is as yet no definite knowledge as to the way or ways in which its transmission may take place. Since, however, the possibility of direct personal infection cannot, on the evidence available, be excluded, it will be wise to endeavour to secure, as far as practicable, the isolation of the sick from the healthy. It will also be advisable to apply suitable measures of disinfection to premises that have been occupied by the sick and to articles that may have been in relation with them.

In view of the fact that the presence of Weichselbaum's diplococcus has been observed in the mucus of the nose and mouth, not only of the sick, but also of those attending on the sick, there may be advantage in resorting to periodical ablutions of the nasal and buccal passages of the sick and their attendants."

Medical News.

UNIVERSITY OF LONDON.—At the Intermediate Examination in Medicine for internal and external students held in January, the following candidates were successful:—

Melville Mortimer Adams, Guy's Hospital; Edward William Archer, B.Sc., St. Mary's Hospital; John Lee Atkinson, Guy's Hospital; Kenneth John Aveling, London Hospital; John Nathaniel Beadles, Westminster Hospital; Benjamin Biggar, Victoria University; Wilfrid Blaydes and Thomas Knowles Boney, St. Bartholomew's Hospital; Norman Booth, Victoria University; Karl Bremer, St. Bartholomew's Hospital; Samuel Stanley Brook, Guy's Hospital; Charles Herbert Broomhead, Victoria University; Albert Harold Godwin Burton, University College, Cardiff, and Guy's Hospital; Ethel Mary Connan, London (Royal Free Hospital) School of Medicine for Women; Robert Lawson Crabb, University College; Colin Harold Crump, Guy's Hospital; Gopal Vinayek Deshmukh and Isaac Marcus Edis, London Hospital; Edgar Lionel Elliott and Alexander Lindsay Fitzmaurice, Guy's Hospital; *†Augustin Pownall Fry, St. Bartholomew's Hospital; ¶Manchersha D. D. Gilder, University College; Alan Waites Hansell, University of Leeds; Guy Fleetwood Hayeraft, Guy's Hospital; Harold Francis Lewis Hugo, Charing Cross Hospital; John Lawrence Johnston, Guy's Hospital; Roger Percival Jones, University College, Cardiff, and University College; Anne Louise Jane Kann, London (Royal Free Hospital) School of Medicine for Women; Oswald Robert Kelly, King's College and Westminster Hospital; David Kennedy and John Stephen Herbert Lewis, University College; John Christopher Lyth, University of Leeds; Arthur Oscar Mitchell, Westminster Hospital; Mabel Muncey, London (Royal Free Hospital) School of Medicine for Women; William James O'Donovan, London Hospital; Hubert O'Meara, University College; *Guy Harcourt Peall, Guy's Hospital Robin Pearse, St. Bartholomew's Hospital; Jean René Perdrau, Guy's Hospital; Alfred Percy Phillips, St. Bartholomew's Hospital; Arthur Borland Porteus, St. Mary's Hospital; Alexander Rutherford P. Scott, London Hospital; Neville Alexander Dyce Sharp, Guy's Hospital; Henry Gordon Smith, St. Bartholomew's Hospital; ¶Margaret Grace Thackrah, B.A., London (Royal Free Hospital) School of Medicine for Women; Harold Thwaite, University of Birmingham; Benjamin Randall Vickers, University of Leeds; James Owen David Wade, Cardiff and Charing Cross Hospital University College; Elsie Warren, London (Royal Free Hospital) School of Medicine for Women; Walter Weir, St. Thomas's Hospital; *Gwilym A. Williams, B.A., University College, Cardiff; William Edgar Williams, Guy's Hospital; Charles Stewart Wink, St. Thomas's Hospital; Robert Noel Woodsend, University College; and Gladys Mary Joan Watts, London (Royal Free Hospital) School of Medicine for Women.

* Distinguished in anatomy. † Distinguished in physiology.
¶ Distinguished in pharmacology.

N.B.—This list, published for the convenience of candidates, is issued subject to its approval by the Senate.

UNIVERSITY OF OXFORD.—A. E. Garrod, D.M., Christ Church, has been co-opted a member of the Board of the Faculty of Medicine.

A COMPLIMENTARY dinner was given to Mr. Pietro Michelli, C.M.G., secretary to the Seamen's Hospital, on Feb. 15th, at the Trocadéro Restaurant, London, Mr. P. Nairne, chairman of the hospital, being in the chair. The occasion for this compliment to Mr. Michelli was to congratulate him on receiving the honour of the Companionship of the Order of St. Michael and St. George. Amongst the distinguished company assembled were Sir W. H. Bennett, Sir Anderson Critchett, Sir Patrick Manson, Sir A. Fanshawe, Sir F. Lovell, Sir Alfred Jones, Sir H. Bardett, Sir W. Treacher, Sir J. Craggs, Dr. C. C. Choyce, Dr. F. M. Sandwith, Mr. H. S. Pendlebury, Dr. Arthur C. Latham, Dr. Guthrie Rankin, Mr. J. Cantlie, Mr. L. H. McGavin, Mr. K. W. Goadby, and the Consul-General for Austria-Hungary. The chairman, in proposing the toast of the guest of the evening, referred to the services rendered by Mr. Michelli to the Seamen's Hospital and declared that the occasion was unique, for no other hospital secretary had been so honoured. The chairman concluded by presenting Mr. Michelli with an antique bowl as a mark of his friends' appreciation of his work. The bowl was a handsome piece of silver gilt of the time of William IV., weighing 95 ounces, and valued at £427. The chairman also presented Mrs. Michelli with a diamond bracelet as a memento of the occasion.

THE DAVID LEWIS MANCHESTER EPILEPTIC COLONY.—The second annual report of the David Lewis Manchester Epileptic Colony has recently been published and shows that steady progress has been made. The chairman of the committee of management, Mr. S. L. Helm, reports that at the end of the first year's working of the colony 95 colonists were in residence, whilst on August 31st last, the close of the second year, the number had risen to 150. Both adults and children are received into the colony and on August 31st, 1906, there were 61 adult males, 49 adult females, 20 boys, and 20 girls. The objects of the institution are two-fold: (1) to establish and maintain homes where persons suffering from epilepsy or allied diseases yet capable of some occupation may receive suitable medical treatment and may enjoy the advantages of regular life with healthy surroundings and where under the necessary supervision they may, according to their age, sex, and condition, be educated, industrially trained, or suitably employed; and (2) to promote the welfare of epileptics generally. The chairman reports that there is an increasing demand by the better class of colonists for accommodation in the first- and second-class houses. He states that the inception and foundation of the colony have been fully justified by the results so far achieved. Funds are required to endow additional free beds for the more needy colonists. Every class of useful occupation and pastime is supplied. Dr. Alan McDougall reports that there have been no deaths during the year and that five colonists have returned to their homes. He states that the children in the licensed school have done well and considers that this is a strong argument against the system of treating epilepsy by brain rest. In addition to the daily administration of bromide of potassium he believes in regular dancing; at first this may give rise to a fit but if frequently practised he finds that no unpleasant after-effects follow. He concludes his remarks by stating that "colony treatment" attempts to rid the patient of fits while he is performing the acts of a normal person and is opposed to the old clinical treatment which forbids the patient to do things which might cause a convulsion.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

A Public Health Bill.

Mr. BURNS has presented a Bill to enable regulations to be made for the prevention of danger arising to public health from the importation, preparation, storage, and distribution of articles of food.

Medical Inspection and Treatment of School Children.

Among the Bills introduced by private Members is one by Mr. WALTER REA to make provision for vacation schools and for the medical inspection and treatment of school children.

Butter and Margarine Bill.

Sir EDWARD STRACHEY has brought in a Bill on behalf of the

Government to make provision with respect to the manufacture, importation, and sale of butter and margarine and similar substances.

Industrial Poisoning.

The preliminary tables relating to cases of industrial poisoning and fatal accidents in factories, workshops, &c., during the year 1906 have been presented to Parliament and are now issued as a white paper. The figures given are subject to correction. The number of cases of industrial poisoning reported is 707, of which 54 resulted in death, as compared with 663 cases in 1905, of which 42 terminated fatally. During 1906 there were 632 cases of lead poisoning, four cases of mercury poisoning, no cases of phosphorus poisoning, five cases of arsenic poisoning, and 66 cases of anthrax. 33 deaths were reported as due to lead poisoning and 21 as due to anthrax. A total of 1116 fatal accidents were reported in 1906. Of these 1098 occurred to males and 18 to females.

Pharmacy Bills.

Mr. WINFREY has presented a Bill to provide for the further regulation of the sale of poisons and the compounding of medical prescriptions and to amend the Pharmacy Acts, 1852 and 1868.

Mr. HERBERT SAMUEL, the Under-Secretary for the Home Department, has given formal notice that he will present a Bill on behalf of the Government to regulate the sale of certain poisonous substances and to amend the Pharmacy Acts.

Infant Life Protection.

Mr. STAVELEY HILL has introduced a Bill to amend the Infant Life Protection Act, 1897.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 13TH.

Cerebro-spinal Fever.

Sir FRANCIS CHANNING asked the President of the Local Government Board whether he would send a circular to local authorities recommending them to use their powers to extend the provisions of the Notification of Diseases Act to cerebral meningitis, or would promptly introduce a short Bill to include this disease under this Act.—Mr. JOHN BURNS answered: The Local Government Board issued a circular to local authorities in August, 1905, inclosing a memorandum which had been prepared by its medical officer on the subject of cerebro-spinal fever. In that circular the Board intimated that it would be prepared to consider any application made to it by a sanitary authority for its approval to an extension of the provisions of the Infectious Disease (Notification) Act, 1889, to that disease for a limited period.

In a written answer to a further question by Sir FRANCIS CHANNING Mr. BURNS stated: There have been 13 local authorities who since the issue of the circular of August, 1905, have, with the approval of the Local Government Board, made cerebro spinal fever a notifiable disease for a limited period. Under the Act of 1889 the local authority in case of an emergency can at any meeting, held after three days' notice, make an order to the effect that the disease shall be compulsorily notifiable. The order is to be advertised forthwith and comes into force at the expiration of a week from the date of the advertisement. The order would not remain in force for more than a month, except with the approval of the Local Government Board; but I am quite prepared to give approval in any case in which it may appear to be necessary that the disease should be made notifiable. My honourable friend will see that the proceedings under the Act involve as little loss of time as is possible and it does not seem to be necessary to bring in a Bill on the subject.

THURSDAY, FEB. 14TH.

Debate on Vaccination.

Mr. ARNOLD LUPTON moved an amendment to the Address expressing regret that the King's Speech did not include proposals for repealing the penal clauses of the Vaccination Acts. In the course of his speech he said that many members who sat on the Ministerial side of the House had been returned by the energy of antivaccinationists. It was said that there was no compulsory vaccination now, but those who said this did not know the real facts. How could a poor labourer afford the expense and sacrifice the time required for obtaining a certificate of exemption when there was a risk of having his application refused by a hostile magistrate? In some parts of the country vaccination was enforced with greater severity than ever. The only way to secure a solution of the difficulty was to abolish compulsion altogether. If the Government could see its way to bring about a reform in this respect he believed it would give as much satisfaction as any reform that could be made. It was a monstrous thing that the manhood and womanhood of the nation should be poisoned in the cradle by the law. A most wicked invention was that of cutting through the skin and putting into the body the pus from a diseased cow. He believed that the Local Government Board had difficulty in getting materials for vaccination. They had to send to Germany for them. Where did the Germans get the horrid stuff? The Local Government Board did not know. So long as it was made in Germany it was good enough for them. He as a British citizen objected to have pus from Germany. By the use of these German materials they might produce a most horrid disease. It was said that vaccination was necessary for the human race, but the human race had got on very well without it. Vaccination was not only useless but it was dangerous as well. As a matter of fact the death-rate from small-pox depended on the treatment given in the hospital. The death-rate in a bad hospital might be 50 per cent. and he knew a case where the treatment had been reformed and then it came down to 17 per cent. They had very little small-pox in the country at the present time and if they might believe the pro-vaccinationists a large part of the population was unvaccinated. The pro-vaccinationists considered any man who had not been vaccinated during the last ten years not to be vaccinated. On that basis of computation there were 25,000,000 people in the country unvaccinated at the present moment.

Mr. LEHMANN, in seconding the amendment, denied that it had been proved that vaccination was so effective in checking disease that it ought to be put compulsorily upon the population. The law of exemption as it at present stood was a farce and an absurdity.

Mr. JOHN BURNS said that last year he had made a speech to the House in the course of which he dealt with several of the objections which were taken to the present law with regard to vaccination, to its cost, its method, and the differential treatment to which rich and poor applicants for exemption certificates were subjected to by magistrates and stipendiaries in London and throughout the country. On that occasion he promised several things. The first was that the Local Government Board this year would insist upon a reduction in the cost of vaccination, which in his judgment was disproportionately large. He was keeping that portion of his promise by having produced a new vaccination order which was now in draft and which he hoped would be circulated in a few days. The object of the new order would be to reduce what, in his judgment, was the excessive cost of vaccination. He had given a definite pledge that he would do something to substitute for the existing form of certificate of exemption something that was more in consonance with common sense and kindly consideration for all applicants. He intended to keep that promise and to keep his pledge by the production of a Bill, which the Government did not think it necessary to include amongst the measures mentioned in the King's Speech but which he intended shortly to introduce and, he hoped, to pass with the assistance of the House before this session of Parliament was over.

Mr. EUGENE WASON: Will the Bill apply to Scotland?

Mr. BURNS: That did not depend upon him; it rested with the Scottish authorities. In his judgment vaccination was not compulsory in England and Wales, but the conditions under which parents could now get exemption were intolerable and ought to be remedied. The Government intended by means of the Bill which he had promised last year to have some effective and simple form of statutory declaration by means of which all this trouble and irritation could be avoided. He trusted that the amendment would in these circumstances be withdrawn.

The debate was then adjourned till the following day.

FRIDAY, FEB. 15TH.

Vaccination.

Mr. CAVE resumed the debate on Mr. Lupton's antivaccination amendment. He said that the Bill announced by the President of the Local Government Board would give certain instalments of abolition and would make the penalties easier than they were now. That was a very serious matter. The House was entitled to know whether the Government accepted the views of the mover of the amendment and whether they were opposed to compulsory vaccination on principle.

Sir WILLIAM COLLINS, who spoke as one of the few survivors of the Royal Commission of 1889 to 1896, said that he doubted very much whether the President of the Local Government Board would find a final solution of the problem if he substituted for the present system a statutory declaration before a magistrate, and whether that would not prove only an instalment leading up to the larger policy of the abolition of compulsion. He did not view that result with alarm. What were the scientific principles on which they should go? On the one hand, they might proceed upon the theory that every individual should be purposely inoculated; on the other hand, they might separate the sick from the healthy and notify and isolate as early as possible every infectious case. So far as the legislature had tackled the question of compulsory vaccination, it had very largely broken down the theory that everyone should be rendered immune by compulsory inoculation. Revaccination was necessary every seven, or at least every ten, years in order to secure the maximum amount of protection. However, Parliament had said it was not necessary to insist upon revaccination, although that was essential to theory, in order to secure immunity. Meanwhile, alongside that process had grown up the principle of isolation and disinfection. Though perfect vaccination might be efficient, primary vaccination must be accompanied by isolation and notification. There were members of the medical profession, whose reputation and standing could not be disputed, who were profound sceptics in regard to vaccination. He admitted that they were in a minority, but no one in the profession to-day took up the position which was taken up when compulsion was first introduced in 1853 that the certainty of vaccination as a preventive was unanimously supported by the medical profession and also that the operation was perfectly free from ill result or harm. The reports of the Royal Commission, majority or minority, did not support either of those propositions, and Parliament had revised its position in respect to the question of compulsion having regard to the development of sanitary science throughout the country, for isolation and disinfection, in the opinion of some eminent men, had been the means of reducing the prevalence of small-pox when vaccination had got the credit. On this account he felt that even the suggestion of the President of the Local Government Board might not be a final one but only an instalment leading up to a larger policy. When the right honourable gentleman introduced his legislation some of them would feel it necessary to push it in that direction. As a surgeon he opposed compulsion, because he would rather have his advice recommended by a process of moral suasion than imposed by the coöperation of policemen, penalties, and imprisonment. He also opposed it as a Liberal, because he thought it unwise to force vaccination on those who regarded it as useless or dangerous.

Mr. WALTER LONG agreed that if it could be attained a complete system of sanitary administration and isolation would be the most valuable preventive against not only small-pox but against many other diseases. In his long experience at the Local Government Board he found that there was no more difficult task imposed on that department than that of inducing local authorities to adopt strict and satisfactory sanitary precautions. They were difficult of application as well as expensive in districts which were not wealthy. He did not gather from the speech of the President of the Local Government Board that he wished it to be understood that the general attitude of his department on the subject of vaccination was in any way altered since he became responsible for it to Parliament. What the right honourable gentleman proposed to do was to facilitate the issue of certificates and reduce the charges of vaccination. With regard to the new form of certificate, he would wait to see what the proposal was. He believed that the question of fees called for prompt treatment. When the new system of domiciliary vaccination was initiated it was impossible to estimate exactly what medical men ought to receive for the work. In many places the fees were found to be excessive, and he

was glad this branch of the subject was to be dealt with. He did not believe that any responsible Minister would do anything likely to weaken the administration of the vaccination laws, and he sincerely hoped that would not be the course adopted by the President of the Local Government Board.

Sir WALTER FOSTER expressed satisfaction that the President of the Local Government Board had promised that in future there should be a rational method by which parents who did not believe in the vaccination of their children could obtain freedom from all compulsion. If the suggestion made in 1898 that conscientious objectors should be able to obtain a certificate of exemption from a court had been adopted the subsequent trouble would have been obviated.

Mr. EUGENE WASON asked from the Secretary of Scotland an assurance that the Government would give favourable consideration to the claims of people in Scotland who objected to vaccination, so that they might be allowed to make a declaration of conscientious objection.

Mr. SINCLAIR replied that he had no difficulty in giving the assurance which the honourable Member asked for.

Mr. T. F. RICHARDS said that he came from Leicester where, for 15 years, the people had resisted the law as to vaccination, having a most perfect system of sanitation.

Mr. J. COLLINGS declared that he was alarmed at the position which the antivaccination campaign had reached, because it showed the power of a resolute and persistent minority, ignoring science and following sentiment, to bring a question to the front.

Dr. MACNAMARA (who spoke for the first time as Parliamentary Secretary to the Local Government Board), remarked that no statistics were, in his opinion, more perplexing than those advanced with regard to vaccination, unless, indeed, they were tariff reform statistics. They had, however, to recognise the fact that from 1853 onwards there had been an increasing agitation against compulsory vaccination. His own opinion was that what ultimately became an objection to the operation of vaccination itself originated in an objection to the manner in which it was carried out. As a result of the prolonged labours of the Royal Commission on Vaccination the Act of 1898 once and for all gave up compulsion. However, it could not be denied that a great many magistrates, challenging the wisdom of the Act, set themselves to make the obtaining of a certificate of exemption as onerous as possible. It was now proposed by the Government to substitute for the present system under which a parent must obtain a certificate of conscientious objection, a new system which would enable a conscientious objector to secure exemption upon making an ordinary statutory declaration. He could not at present indicate more definitely the nature of the proposals of the Government.

Mr. MUNRO-FERGUSON said that he had not been prepared for the statement that a change in the law with regard to vaccination in Scotland was in contemplation. He maintained that the compulsory law had been upheld by public opinion in Scotland.

Mr. SMEATON thought that in the central part of Scotland there was a strong feeling not so much against the principle of a properly administered vaccination system as against the inequality of treatment as between Scotland and England.

Mr. PICKERSGILL remarked that the promise made by the Government went a considerable length towards meeting the views of those who supported the amendment.

Mr. LUPTON then, with the leave of the House, withdrew his amendment.

MONDAY, FEB. 18TH.

Army Medical Service Advisory Board.

Mr. WEIR asked the Secretary of State for War whether he would state why no member of a Scotch medical school had been placed on the Army Medical Service Advisory Board.—Mr. HALDANE answered: When the new Advisory Board was formed it was decided that in order to insure prompt consideration of questions of importance it was essential that all the members should be in the closest possible touch with the army medical administration and therefore, as far as possible, at hand.

TUESDAY, FEB. 19TH.

Soldiers and Tuberculosis.

In reply to Mr. SUMMERBELL,

Mr. BUCHANAN (Financial Secretary to the War Office) said: A notification is sent, in accordance with the medical regulations, to the medical officer of health of the town in which a soldier, discharged on account of tubercle of the lung, intends to reside. This notice is sent in the public interest and is not intended to be a request to keep the man under supervision. The question of the provision of a sanatorium for soldiers invalided out of the service has been very fully considered and the scheme has been found impracticable

Major SEELY: Is my honourable friend aware that a great number of men are invalided out of the army on account of consumption? Netley Hospital is not suitable for their reception. Is it not really possible to provide sanatoriums for them? Would the War Office arrange with some of the hospitals to receive consumptive patients from the army rather than allow them to be sent home?

Mr. BUCHANAN: The War Office endeavours in all cases where practicable to secure that these discharged men are received in hospitals.

Major SEELY: I do not think that is done.

Asylum Officers in Scotland.

Mr. SINCLAIR informed Sir JOHN JARDINE that he was unable to give any assurance that he would this session introduce legislation to put the officers of the Melrose Asylum and other district asylums in Scotland in as advantageous a position with regard to superannuation allowances as similar officers in England, Wales, and Ireland.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, 41 and 43, Maddox-street, Bond-street, London, W.

Some Problems of Existence. By Norman Pearson. Price 7s. 6d. net.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent Garden, London, W.C.

The Prevention of Cancer and its Relation to that of Some Other Diseases and Calamities. By C. B. Keetley, F.R.C.S., Senior Surgeon to the West London Hospital. Price 1s. net.

SURGERY PUBLISHING COMPANY, 92, William-street, New York, U.S.A.

Plaster-of-Paris and How to Use It. By Martin W. Ware, M.D., Adjunct Attending Surgeon, Mount Sinai Hospital; Surgeon to the Good Samaritan Dispensary; Instructor of Surgery, the New York Post-Graduate School. Price, cloth, $1.00.

STANFORD, EDWARD, 12, 13, and 14, Long Acre, London, W.C.

The Pocket Guide to the West Indies. By Algernon E. Aspinall. Price 6s.

A Cruise Through Eastern Seas: being a Traveller's Guide to the Principal Objects of Interest in the Far East. By A. G. Plate. (Published for the Norddeutscher Lloyd, Bremen.) Price 6s.

SWAN SONNENSCHEIN AND Co., LIMITED, 25, High-street, Bloomsbury, London, W.C.

The Schoolmasters' Year-book and Directory, 1907. Fifth Annual Issue. Price 6s. net.

The Public Schools Year-book. Eighteenth Year of Publication. 1907. Founded by Three Public School Men, Eton, Harrow, Winchester. Price 3s. 6d. net.

TAYLOR, J. AND H., 54, Tenby-street North, Birmingham.

The Manipulation and Fitting of Ophthalmic Frames. By Harry L. Taylor, Author of "The Practical Optician's Guide" and Joint Author of "The Key to Sight Testing." Price 4s.

"THE LOCAL GOVERNMENT JOURNAL" OFFICE, 27a, Farringdon-street, London, E.C.

The Local Government Annual and Official Directory, 1907. Officially Corrected. Edited by S. Edgecumbe Rogers. Sixteenth Year of Publication. Price 1s. 6d.

UNIVERSITY OF CHICAGO PRESS, Chicago. UNWIN, T. FISHER, 1, Adelphi-terrace, London, W.C.

Animal Micrology. Practical Exercises in Microscopical Methods. By Michael F. Guyer, Ph. D., Professor of Zoology in the University of Cincinnati. Price 9s. net.

The Sanitary Evolution of London. By Henry Jephson, L.C.C., Author of "The Platform: its Rise and Progress." Price 6s. net.

UNIONE TIPOGRAFICO-EDITRICE, Corso Raffaello, 28, Toroin.

Manuale dell'Igienista ad Uso di Ufficiali Sanitari, Medici Provinciali, Ingegneri, Chimici e Veterinari Igienisti, Uffici e Laboratori d'Igiene. Per Cura del Prof. Angelo Celli, Direttore dell'Istituto d'Igiene della R. Università di Roma, con la Collaborazione di O. Casagrandi, T. Gualdi, I. Nocotti, E. Reseri, G. Roster, A. Scala, e D. Spataro. Opera in 2 volumi. Terza Edizione interamente rifatta del Manuale dell'Ufficiale Sanitario. Price L.40.

UNIVERSITY CORRESPONDENCE COLLEGE, Burlington House, Cambridge.

The Calendar, 1907–1908. Price 1s. net.

URBAN UND SCHWARZENBERG, Berlin und Wien.

Die Therapie der Magen- und Darmkrankheiten. Von Dr. Walter Zweig, Spezialarzt für Magen- und Darmkrankheiten in Wien. Price M.10.

W. B. SAUNDERS COMPANY, Philadelphia and London.

Atlas and Text-book of Human Anatomy. By Dr. Johannes Sobotta, Professor of Anatomy in the University of Würzburg. Edited, with Additions, by J. Playfair McMurrich, A.M., Ph.D., Professor of Anatomy in the University of Michigan. Volume II. The Viscera, including the Heart. Price 25s. net.

A Text-book of Diseases of Women. By Charles B. Penrose, M.D., Ph.D., formerly Professor of Gynecology in the University of Pennsylvania; Surgeon to the Gynecean Hospital, Philadelphia. Fifth edition, revised. Price 16s. net.

Abdominal Operations. By B. G. A. Moynihan, M.S (London), F.R.C.S., Leeds. Second edition, thoroughly revised. Price 28s. net.

The Elements of the Science of Nutrition. By Graham Lusk, Ph.D., M.A., F.R.S. (Edin.), Professor of Physiology at the University and Bellevue Hospital Medical College, New York City. Price 12s. net.

The Immediate Care of the Injured. By Albert S. Morrow, A.B., M.D., Attending Surgeon to the Workhouse Hospital and to the New York City Home for the Aged and Infirm; Assistant Attending Surgeon to the Manhattan Maternity Hospital. Price 12s. net.

A Manual of Pathology. By Guthrie McConnell, M.D., Pathologist to the St. Louis Skin and Cancer Hospital and to St. Luke's Hospital; Bacteriologist to the Missouri State Board of Health. Price 12s. net.

Atlas and Text-book of Dentistry, including Diseases of the Mouth. By Gustav Preiswerk, M.D., Ph.D., of the University of Basel. Authorised Translation from the German. Edited by George W. Warren, A.M., D.D.S., Professor of Principles and Practice of Operative Dentistry, Pennsylvania College of Dental Surgery. Price, cloth, 15s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BRANDER, H. STEWART, M.D., Ch.B. Aberd., has been appointed Honorary Surgeon to the Victoria Hospital, Keighley.

BRODRICK, CHARLES CUMBERLAND, L.R.C.P., L.R.C.S., L.M. Edin., has been appointed Medical Officer for the Whitchurch and South Lydford District by the Tavistock (Devon) Board of Guardians.

COATES, CHARLES JOSEPH ADAMS, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed District Medical Officer by the Shepton Mallet (Somerset) Board of Guardians.

CONDON, FREDERICK W., L.R.C.P. Irel., F.R.C.S. Irel., has been appointed Medical Referee under the Workmen's Compensation Acts, 1897 and 1900, and to act for the county of Donegal.

DRURY, W. H., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed District Medical Officer to the West Ham Board of Guardians.

FELTON, WALTER BRAITHWAITE, L.R.C.P., L.R.C.S., L.M. Irel., has been appointed Public Vaccinator for the Newlyn (East) District by the St. Columb (Cornwall) Board of Guardians.

JENKINS, T. J., L.R.C.P. Lond., M.R.C.S., has been appointed House Surgeon at the Cardiff Infirmary.

KING, THOMAS ARTHUR, L.R.C.P. Lond., M.R.C.S., has been appointed Medical Officer to the Court Stamford Lodge of Oddfellows at Stratton (Cornwall).

LOCKYER, CUTHBERT, M.D., B.S., F.R.C.S., M.R.C.P., has been appointed Consulting Gynæcologist to St. Mary's Hospital for Women and Children.

MARTINEAU, A. J., F.R.C.S. Edin., has been appointed Honorary Surgeon to the Throat and Ear Hospital, Brighton.

MILNE, MEARNS A., M.B., Ch.B. Aberd., has been appointed Medical Officer to the Montrose Parish Council.

OGG, A. W. T., L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer of Health for the Burgh of Rothes, Morayshire.

OXLEY, A. J. RICE, M.D. Dub., M.R.C.S., has been appointed a Physician-in-Ordinary to Her Royal Highness Princess Henry of Battenberg.

REES, MORGAN JAMES, M.D. Lond., L.R.C.P., M.R.C.S., D.P.H. Lond., has been appointed Medical Officer of Health of Aberdare.

SCATLIFF, H. H. E., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Surgeon to the Brighton and Hove and Sussex Throat and Ear Hospital.

SQUARE, W. RUSSELL, M.R.C.S., L.R.C.P. Lond., has been appointed House Physician at the Essex and Colchester Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BIRKENHEAD AND WIRRAL CHILDREN'S HOSPITAL, Woodchurch-road, Birkenhead.—House Surgeon. Salary £100, with board, residence, and laundry.

BRIGHTON, SUSSEX COUNTY HOSPITAL.—Assistant Pathologist. Salary £80 a year, with board and lodging. Also Honorary Assistant Surgeon. Also Third House Surgeon, unmarried. Salary £50 per annum, with board and residence.

BRISTOL GENERAL HOSPITAL.—Pathologist. Salary £240 per annum.

BROADMOOR, CROWTHORNE, BERKS, STATE CRIMINAL LUNATIC ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £200, rising to £225 per annum, with quarters, coal, gas, and attendance.

CANCER HOSPITAL, Fulham-road, London, S.W.—House Surgeon. Salary £80 per annum.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W.—Clinical Assistant.

DEVONPORT, ROYAL ALBERT HOSPITAL.—Assistant Resident Medical Officer for six months. Salary at rate of £50 a year, with board, lodging, and laundry.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—House Surgeon for six months. Honorarium of £25, with board, residence, laundry, &c. Also Medical Officer for the Casualty Department for six months, renewable. Salary at rate of £100 per annum, with luncheon.

ECCLES AND PATRICROFT HOSPITAL.—House Surgeon, unmarried. Salary £70 per annum, with board and washing.

GLOUCESTER GENERAL INFIRMARY AND GLOUCESTERSHIRE EYE INSTITUTION.—Surgeon.

HARTSHILL, STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY AND EYE HOSPITAL.—Junior House Surgeon. Salary £50 per annum, with board, apartments, and washing.

HOSPITAL FOR EPILEPSY AND OTHER DISEASES OF THE NERVOUS SYSTEM, Maida Vale.—Resident Medical Officer for six months. Salary at rate of £50 a year, with board and washing.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.—Anæsthetist.

ILKESTON, BOROUGH OF.—Medical Officer (female). Salary £100 per annum.

LEEDS GENERAL INFIRMARY.—Resident Surgical Officer. Salary £150 per annum, with board, residence, and washing.

LEICESTER INFIRMARY.—House Surgeon. Salary £100 per annum, with board, apartments, and washing.

LIVERPOOL INFIRMARY FOR CHILDREN.—Assistant House Surgeon for six months. Salary £30, with board and lodging.

LIVERPOOL, ROYAL SOUTHERN HOSPITAL.—Three House Physicians and Three House Surgeons. Salary at rate of £60 per annum, with board and residence.

LONDON SCHOOL OF TROPICAL MEDICINE.—"Craggs' Research Prize," value £50.

MANCHESTER CHILDREN'S HOSPITAL.—Junior Resident Medical Officer, unmarried, for six months, eligible for election as Senior Medical Officer for another six months. Salaries at rate of £80 and £100 a year, with board and lodging.

MANCHESTER, ST. MARY'S HOSPITALS FOR WOMEN AND CHILDREN.—House Surgeon for six months. Honorarium of £25, with board and residence.

MANCHESTER WORKHOUSE, Crumpsall.—Assistant Medical Officer, unmarried. Salary £110 per annum, with apartments, fire, light, washing, and attendance.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—House Physician, House Surgeon, Assistant House Physician, and Assistant House Surgeon, all for six months. Also Resident Anæsthetist. Salary at rate of £40 per annum.

MIDDLESEX HOSPITAL, W.—Resident Medical Officer, unmarried. Salary £200, with residence and board.

NORTHAMPTON, SAINT ANDREW'S HOSPITAL FOR MENTAL DISEASES.—Third Assistant Medical Officer. Salary £150 per annum, with board, lodging, and washing.

NORTH-EASTERN HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Surgeon for six months. Salary at rate of £60 per annum, with board, residence, and laundry allowance.

POLTON, NEW SAUGHTON HALL PRIVATE ASYLUM.—Resident Assistant Medical Officer. Salary £120 per annum, all found.

POWICK, NEAR WORCESTER, WORCESTER COUNTY AND CITY ASYLUM.—Third Assistant Medical Officer. Salary £140, rising to £160, with board, lodging, and washing.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—Resident Medical Officer. Salary at rate of £60 per annum, with board, residence, and washing.

ROTHERHAM HOSPITAL AND DISPENSARY.—Assistant House Surgeon. Salary at rate of £80 per annum, with board, lodging, and washing.

ROYAL EYE HOSPITAL, OR ROYAL SOUTH LONDON OPHTHALMIC HOSPITAL, St. George's-circus, S.E.—Refraction Assistant. Honorarium £40 per annum.

ROYAL HOSPITAL FOR DISEASES OF THE CHEST, City-road, E.C.—House Physician for six months. Salary at rate of £60 per annum, with board, lodging, and washing.

ROYAL NATIONAL MISSION TO DEEP SEA FISHERMEN, 181, Queen Victoria-street, E.C.—Two Medical Officers to act on Hospital Ship. Salary £4 4s. a week and board.

ST. LEONARDS-ON-SEA, CHELSEA HOSPITAL FOR WOMEN, CONVALESCENT HOME.—Honorary Medical Officer.

ST. PETER'S HOSPITAL FOR STONE, &c, Henrietta-street, Covent Garden, W.C.—Junior House Surgeon. Salary at rate of £50 a year, with board, lodging, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Assistant House Surgeon. Salary £75 per annum, with residence, board, and washing.

STAFFORD, STAFFORDSHIRE GENERAL INFIRMARY.—Assistant House Surgeon for six months. Salary £31, with board, residence, and laundry.

WANDSWORTH UNION INFIRMARY, St. John's Hill, near Clapham Junction.—Male Junior Assistant Medical Officer, unmarried, for six months. Salary at rate of £100 a year, with board, lodging, and washing.

WEST BROMWICH DISTRICT HOSPITAL.—Resident Assistant House Surgeon, unmarried. Salary £50 per annum, with board, residence, and washing.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Two House Physicians and Three House Surgeons for six months. Board, lodging, and washing.

WOKINGHAM, BERKS, LONDON OPEN-AIR SANATORIUM, PINEWOOD.—Assistant Resident Medical Officer. Salary £100 per annum and all found.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—House Physician. Salary £80 per annum, with board, lodging, and washing.

YORK COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

THE Chief Inspector of Factories, Home Office, S.W., gives notice of a vacancy as Certifying Surgeon under the Factory and Workshop Act at Dorking, in the county of Surrey.

Births, Marriages, and Deaths.

BIRTHS.

BENTLEY.—On Feb. 15th, at Gladwins, Limpsfield, Surrey, the wife of J. Reginald Bentley, M.B., B.C., &c., of a son.

EVANS.—On Feb. 15th, at Upper Wimpole-street, W., the wife of Wilmott Evans, M.D., F.R.C.S., of a daughter.

MASINA.—On Dec. 16th last, at Warden-road, Malabar Hill, Bombay, India, the wife of Dr. H. W. Masina, F.R.C.S., of a daughter.

ROB.—At Hungerford Lodge, Ostlands Park, Weybridge, on Feb. 19th, the wife of J. W. Rob, of a daughter.

WILLIAMS.—On Feb. 19th, at The Moat, Harrow-on-the-Hill, the wife of Dr. A. H. Williams, of a daughter.

MARRIAGES.

HAIR—GORDON.—At Richmondhill, Aberdeen, on the 14th February, by the Rev. Andrew Brown, West Parish, Allan Hair, M.R.C.S., L.R.C.P. Lond., Fairmead House, Holloway, N., second son of John Hair, of Hampstead, N.W., to Janie, fourth daughter of the late Donald Gordon, Bovaglie, Ballater.

HENDERSON—SMIJTH-WINDHAM.—On Feb. 9th, at St. Andrew's, Ashley-place, S.W., Thomas Bonhote Henderson, M.B. Oxon., F.R.C.S., to Katherine Emily, eldest daughter of Lieutenant-Colonel J. Smijth-Windham, of Ridgway, Farnham, Surrey.

QUINTON—LAVINGTON.—On Feb. 18th, at the Congregational Church, East Finchley, Herbert Quinton, L.D.S. R.C.S. Eng., of Sligo, Ireland, to Bessie, elder daughter of Charles David Lavington, of Berrsford House, East Finchley.

DEATHS.

GRAHAM.—On Feb. 13th, R. A. L. Graham, B.A., M.B., Assistant Medical Officer, Belfast District Lunatic Asylum, aged 31 years.

PALMER.—On Feb. 17th, at Glenleigh, Alverstoke, Francis Craddock Palmer, M.D., aged 54 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

"MALADVERTISEMENT."

IN THE LANCET of Jan. 19th we put it upon record, under the above heading, that the Capsuloid Company were deliberately making use of our analysis in order to deceive the public. Another firm is now doing the same thing. In THE LANCET of Jan. 6th, 1906, we gave the analysis of certain capsules containing hæmoglobin, which at that date they undoubtedly did contain. They were sent in by a firm trading as Jules Denoual and Co. Messrs. Denoual now advertise these capsules under the name of "Hair Producing Capsules," and in connexion with this advertisement they quote our analysis, but we do them the justice to say that they quote it in full and quite accurately, also giving the date when it appeared. The collocation of the statements in the advertisement and our analysis is evidently meant to delude the public into thinking that we recommended the capsules as good for promoting the growth of the hair. That the public are deluded is proved by the following letter. We must premise that the writer inclosed to us an advertisement of the capsules in question.

> DEAR SIRS,—I have taken 29 boxes of this preparation without any benefit whatever; indeed, I am afraid I am injuring my digestion. I tried them because you so strongly recommend them, but I am beginning to wonder whether you really knew whether they were any good or not when you wrote this testimonial. Perhaps you never did write the testimonial. Will you please tell me should I go on taking this medicine, and do you know whether it contains anything which is spoiling my digestion. I am very anxious about my hair, but I would rather lose it than spoil my digestion. I am, Sirs, respectfully yours,

Our correspondent's woes are, in more senses than one, on his own head. We never gave the capsules in question any testimonial as to being good for the hair. The word hair was not mentioned by us. All we said was that they contained, when we analysed them, pure hæmoglobin. Our correspondent's case is only one more instance of the manner in which persons who try to treat themselves come to grief and are deluded by false statements in advertisements. There appears to be a boom in quack hair preparations at present. Flagrant advertisements of a hair "specialist" named Warner Oliver have recently appeared in the daily press, notably a two-column one in the *Times* of Feb. 12th, p. 6. As regards Jules Denoual and Co. they are using our statements with the deliberate intention of deceiving the public and, as is obvious from the letter of our correspondent, succeed in so doing.

THE "ANTI-OPIUM" PLANT.

To the Editors of THE LANCET.

SIRS,—In reply to "Enquirer" the so-called "anti-opium" plant, according to the *Pharmaceutical Journal*, has been identified by Mr. E. M. Holmes as *Combretum sundaicum*, Miquel, a woody climber, abundant on the plains near Selangor and in the Malay jungles. The flowers are white and the fruit red; the leaves are faintly bitter and acrid. The fruit was first used in China as a cure for the opium habit. An anti-opium society has been formed recently in Kuala Lumpur and the drug is distributed free. It is claimed that during the first few weeks after the formation of the society 14,000 people were cured in the Kuala Lumpur district alone. It is alleged that the average time required for a cure is from five days to three weeks. The directions for using the drug are printed in Chinese and are thus translated: "Cut the leaves and roots into pieces, weigh 2 oz., and roast them for twenty minutes; then spread them on paper and allow to cool. Boil with four brandy bottlefuls of water, evaporate to half the volume, and strain. If a man has been in the habit of smoking 5 drachms of opium per diem he must take 5 drachms of extract of opium, roast it over a flame, and put it into a bottle of the decoction. This is called the 'anti-opium mixture.'" A dose of one and a half tablespoonfuls is to be taken as often as the patient has been in the habit of smoking opium. Every time a dose is taken from the "anti-opium mixture" an equal dose is transferred from a bottle of the simple decoction to replace it. In this way the dose of opium is diminished gradually. Though no European evidence of actual cures is yet available many names and addresses have been published in the Chinese papers of people who claimed to have quite mastered the habit. From a preliminary examination of the plant made by Professor Crossley in the laboratory of the Pharmaceutical Society it appears that the decoction contains a substance of the tannin group but no alkaloidal constituent was found. The fact that the leaves are roasted before use throws some doubt on their intrinsic utility, but a consideration of the directions given above suggests that it is not the plant itself which effects cures, if cures there have been, but the sound principle upon which the treatment is based—viz., the gradual reduction of the dose of opium administered. I am, Sirs, yours faithfully,

Feb. 16th, 1907. HESPERUS.

UNQUALIFIED MIDWIFERY: A DRUGGIST CRITICISED.

AT Coed Talon, near Mold, on Feb. 1st, the Flintshire coroner, Mr. F. Llewelyn Jones, held an inquiry concerning the death of Elizabeth Williams, aged 44 years, a married woman, who had died on Jan. 29th. The husband stated that his wife was confined at 6.45 A.M. on Jan. 29th and that she died at 9.30 A.M. the same day. She was attended by Mr. John Jones, druggist, of Pontybodkin, and by Elizabeth Humphreys. He knew that Mr. Jones was not a qualified medical man but his wife preferred to engage him.

Elizabeth Humphreys said that she was not a registered midwife but had acted as a midwife for many years and had attended at confinements at which Mr. Jones was present. She was present when the child was born suddenly. A little before 7 A.M. she was obliged to send for Mr. Jones, who on his arrival suggested wiring for Dr. Edwards of Mold. Mr. Jones left about 9.30 A.M. and the woman died a few minutes later.

Mr. John Jones of Pontybodkin stated that he was a registered pharmaceutical chemist, but was registered without examination as being in business before the passing of the Pharmacy Act, 1868. A few weeks ago he received a note from Mrs. Williams asking if he would attend her at her confinement if he was required. He was sent for on Jan. 29th about 2 A.M. and he stayed with the patient till 4 A.M. He was sent for again and when he arrived the child had been born. He removed the placenta.

Dr. William J. Bell (Pontblyddyn) stated that he made a post-mortem examination together with Dr. K. Vincent Trubshaw of Mold. They found a large ante-mortem blood clot in the pulmonary artery. This clot of blood was the cause of death. He was satisfied that death was due to natural causes.

The coroner said that though death was, according to the medical evidence, due to natural causes it was a disgraceful state of affairs that Mrs. Williams should have been left in the care of an unqualified medical practitioner and an unregistered and unqualified midwife, who seemed to know absolutely nothing of their responsibility. A verdict of "Death from natural causes" was returned.

A WARNING.

To the Editors of THE LANCET.

SIRS,—By inserting this you may put others on their guard against a plausible, voluble fellow who imposed upon me last week by boldly announcing himself as the secretary of the Society of Amalgamated Engineers who had come to tell me that I had been appointed surgeon to the society for this district. Entering into numerous details he volunteered a written statement of liberal terms, signing himself J. Munro, 21, Leopold-road, Hammersmith. He asked for nothing; but before leaving mentioned, parenthetically, that he would have to walk home to Hammersmith as he had been "cleared out" that morning. I felt that I could not allow the bearer of the glad tidings to trudge across London on a dirty day so handed him a trifle. Apparently I did not satisfy him, as I am still waiting for the list of members he promised to send me. His age is about 30 years; height, 5 feet 10 inches; not stoutly built; hair, sandy coloured; eyes, blue and smallish; moustache, fair and not large enough to conceal loss of some upper incisors; he wore a hard pot hat, dark over and under coats, and pronounced Woolwich as "Walledge."

I am, Sirs, yours faithfully,

London, N., Feb. 18th, 1907. A VICTIM.

SOFT-SHELLED EGGS.

A WRITER in the *Scientific American* of Feb. 9th states that the common belief according to which soft-shelled eggs are due to an insufficiency of lime in the food consumed by the hens is erroneous. He considers that the soft-shelled egg is a case of arrested development, due to nervous interference with the functions of the oviduct. The laying of incompletely developed eggs corresponds to abortion in mammals and can likewise be brought about by extreme mental disturbance. Investigations conducted at the Kansas Experiment Station have shown that the production of soft-shelled eggs may be caused by continued excitement of confined hens. It was also shown that the hen' system on an ordinary diet contains enough calcium carbonate for the formation of about five or six eggs, and that if lime was withheld from the food the hen, after laying this number of eggs, would stop laying.

WHAT IS A SECRET REMEDY?

To the Editors of THE LANCET.

SIRS,—I shall be glad if you will give a reply to the two following questions. 1. What is the definition of the term "secret remedy" as applied to qualified medical practice? 2. Is the refusal on the part of a medical man to divulge to a patient the exact formula of a medicine which he has previously dispensed in his own surgery synonymous with "using a secret remedy"? Thanking you in anticipation,

I am, Sir, yours faithfully,

Feb. 9th, 1907. M.

*** 1. We mean by a secret remedy one the formula of which has not, and will not, be disclosed to the medical profession. 2. We understand that the composition of his medicines is the medical man's own affair. He need not divulge it to a patient, but he must be able to tell any member of the medical profession what remedies he has used.—ED. L.

A QUESTION FOR MOTORISTS.

To the Editors of THE LANCET.

SIRS,—I shall be glad if any of your readers who have used the Stanley and the Turner-Miesse steam cars in their practice will give me, through your columns, their experience of these cars. Amongst other things, perhaps they would kindly say how long it takes to start the car from cold; whether it can be quickly started again after standing for a time; whether there is emission of steam when running; whether the car is easy to keep in running order and cheap to maintain; and how far the car will run on one filling of water and fuel. If there are weak points I should be glad to know of them, with an expression of opinion as to whether they could be easily remedied.

I am, Sirs, yours faithfully,

ANGLO-INDIAN.

A CORRESPONDENT asks us what would be the best books to read upon (1) the education of defective children and (2) medical inspection of school children. Perhaps some of our readers can give him the information which he requires.

H. E. T. (Kingston Hill)—Our correspondent repeats a popular fallacy.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (25th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (3 P.M.), St. Mark's (2.30 P.M.).

TUESDAY (26th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (2 P.M., Ophthalmic, 2.15 P.M.), Tottenham (2.30 P.M.).

WEDNESDAY (27th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Ear (2 P.M.), Royal Orthopædic (3 P.M.), Children, Gt. Ormond-street (9.30 A.M., Dental, 2 P.M.), Tottenham (Ophthalmic, 2.30 P.M.).

THURSDAY (28th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Royal Orthopædic (9 A.M.), Royal Ear (2 P.M.), Children, Gt. Ormond-street (2.30 P.M.), Tottenham (Gynæcological, 2.30 P.M.).

FRIDAY (1st).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.), Central London Throat and Ear (2 P.M.), Children, Gt. Ormond-street (9 A.M., Aural, 2 P.M.), Tottenham (2.30 P.M.).

SATURDAY (2nd).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.), Children, Gt. Ormond-street (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

MONDAY (25th).—MEDICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—8.30 P.M.: Papers:—Mr. F. S. Eve: Some Operations for Malignant Growths of the Naso-pharynx and Pharynx.—Mr. H. J. Curtis: A Case of Hæmaturia due to Bilharzia Hæmatobia, causing Papillomata of the Bladder; Suprapubic Cystotomy, and Removal of Growth.

ODONTOLOGICAL SOCIETY OF GREAT BRITAIN (20, Hanover-square, W.).—7 P.M.: Council Meeting. 8 P.M.: Casual Communication:—Mr. W. S. Nowell: A Case of Geminated Temporary Teeth.—Adjourned Discussion on Mr. P. Turner's paper on Tumours of the Superior Maxilla. Special Meeting to consider the Vote of the Society taken on Nov. 26th in favour of the Amalgamation Scheme. Mr. J. H. Mummery will make a statement concerning the Present Position of the Society with regard to the Scheme.

TUESDAY (26th).—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M.: Papers:—Dr. N. Raw: Human and Bovine Tuberculosis, with Special Reference to Treatment with Special Kinds of Tuberculin. (Microscopic and Epidiascope Demonstrations.)

WEDNESDAY (27th).—HUNTERIAN SOCIETY (London Institution, Finsbury-circus, E.C.).—8.30 P.M.: Pathological Meeting.

FRIDAY (1st).—WEST KENT MEDICO-CHIRURGICAL SOCIETY (Miller Hospital, Greenwich-road, S.E.).—Clinical Evening.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (25th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. S. E. Dore: Clinique. (Skin.) 5.15 P.M.: Lecture:—Dr. L. Williams: The Vagaries of Blood Pressure.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—12 noon: Pathological Demonstration:—Dr. G. C. Low. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. X Rays. Mr. Dunn: Diseases of the Eye. 5 P.M.: Clinical Lecture:—Dr. Russell.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—9.30 A.M.: Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Cliniques: Medical Out-patient (Dr. Whipham), Throat, Nose, and Ear (Mr. Carson); X Ray Demonstration (Dr. Pirie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Sir D. Duckworth: Medicine. 3.15 P.M.: Mr. W. Turner: Surgery. 4 P.M.: Dr. St Clair Thomson: Diseases of the Throat, Nose, and Ear. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

TUESDAY (26th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. W. Harris: Clinique. (Medical.) 5.15 P.M.: Lecture:—Dr. D. Sommerville: Medical Conditions of the Alimentary Tract—Gastric Ulcer.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. M. Moullin: Gynæcological. 2 P.M.: Medical and Surgical Clinics. Dr. Ball: Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. X Rays. Dr. Abraham: Diseases of the Skin. 5 P.M.: Lecture:—Dr. Moullin: Treatment of Posterior Displacement and Prolapse.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—10.30 A.M.: Clinique:—Medical Out-patient (Dr. Auld). 2.30 P.M.: Surgical Operations (Mr. Carson); Cliniques: Gynæcological Out-patient (Dr. Giles), Surgical Out-patient (Mr. Edmunds). 4.30 P.M.: Lecture:—Dr. Auld: Treatment of Certain Bronchial Affections.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. T. Hewlett: Medicine. 3.15 P.M.: Mr. Carless: Surgery. 4 P.M.: Mr. M. Morris: Diseases of the Skin. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin. 4 P.M.: Special Lecture:—Mr. M. Morris: Dry Scaly Affections.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. R. Russell: Cerebellar Disease.

CHARING CROSS HOSPITAL.—4 P.M.: Demonstration:—Mr. Fairbank: (Orthopædic). (Post-Graduate Course.)

ROYAL INSTITUTION OF GREAT BRITAIN (Albemarle-street, W.).—3 P.M.: Prof. W. Stirling: The Visual Apparatus of Man and Animals.

WEDNESDAY (27th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. M. White: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. G. H. Savage: The More Recent Treatment of the Insane.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. Dr. Saunders: Diseases of Children. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. X Rays. 5 P.M.: Dr. Beddard: Practical Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—2.30 P.M.: Cliniques:—Dermatological (Dr. Meachen), Ophthalmological (Mr. Brooks), Medical Out-patient (Dr. Whipham).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. F. Taylor: Medicine. 3.30 P.M.: Mr. Cargill: Ophthalmology. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye. 3.30 P.M.: Special Lecture:—Mr. Cargill: Glaucoma.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST (Brompton).—4 P.M.: Lecture:—Dr. H. Mackenzie: Cases from the Wards.

THURSDAY (28th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Mr. Hutchinson: Clinique. (Surgical.) 5.15 P.M.: Lecture:—Dr. B. Abrahams: Some Common Types of Neurasthenia.

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. X Rays. Mr. Dunn: Diseases of the Eye. 5 P.M.: Lecture:—Mr. Edwards: Urinary Cases.

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—2.30 P.M.: Gynæcological Operations (Dr. Giles). Cliniques:—Medical (Dr. Whiting), Surgical Out-patient (Mr. Carson). 3 P.M.: Clinique:—Medical In-patient (Dr. Chappel). 4.30 P.M.: Lecture:—Mr. Cantlie: Demonstration in Relation to Tropical Disease.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. G. Rankin: Medicine. 3.15 P.M.: Sir W. Bennett: Surgery. 4 P.M.: Dr. H. Cooper: Radiography. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Ear and Throat.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN (Leicester-square, W.C.).—6 P.M.: Chesterfield Lecture:—Dr. M. Dockrell: Ul-erythema: I., Centrifugum; II., Telangiectic; III., Ophryogenes.

CHARING CROSS HOSPITAL.—4 P.M.: Dr. Eden: Demonstration (Gynæcological). (Post-Graduate Course.)

HOSPITAL FOR SICK CHILDREN (Gt. Ormond-street, W.C.).—4 P.M.: Lecture:—Mr. Waugh: Some Diseases of the Naso-pharynx.

ASSOCIATION OF CERTIFICATED DISPENSERS (Apothecaries' Hall, Blackfriars, E.C.).—7.30 P.M.: Address:—Dr. F. S. Toogood.

CENTRAL LONDON THROAT AND EAR HOSPITAL (Gray's Inn-road, W.C.).—5 P.M.: Demonstration:—Dr. D. Grant: Case Taking.

FRIDAY (1st).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M.: Dr. E. Waggett: Clinique. (Ear.)

POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. M. Moullin: Gynæcological. 2 P.M.: Medical and Surgical Clinics. Dr. Ball: Diseases of the Throat, Nose, and Ear. 2.30 P.M.: Operations. X Rays. Dr. Abraham: Diseases of the Skin. 5 P.M.: Lecture:—Mr. C. Williams; Finsen, Ultra-Violet, and other Methods of Photo-therapy (illustrated by lantern slides).

NORTH-EAST LONDON POST-GRADUATE COLLEGE (Tottenham Hospital, N.).—9.30 A.M.: Clinique:—Surgical Out-patient (Mr. H. Evans). 2.30 P.M.: Surgical Operations (Mr. Edmunds). Cliniques:—Medical Out-patient (Dr. Auld), Ophthalmological (Mr. Brooks). 3 P.M.: Clinique:—Medical In-patient (Dr. Leslie).

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich).—2.30 P.M.: Operations. 2.30 P.M.: Dr. R. Bradford: Medicine. 3.15 P.M.: Mr. McGavin: Surgery. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 12 noon: Skin.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC (Queen-square, Bloomsbury, W.C.).—3.30 P.M.: Clinical Lecture:—Dr. R. Russell: Myasthenia Gravis.

ROYAL SANITARY INSTITUTE (Parkes Museum, Margaret-street, W.).—5.30 P.M.: Lecture:—Prof. R. Ross: Points of Interest connected with Tropical Sanitation (illustrated by lantern slides).

SATURDAY (2nd).—POST-GRADUATE COLLEGE (West London Hospital, Hammersmith-road, W.).—10 A.M.: Dr. Ball: Diseases of the Throat, Nose, and Ear. 2 P.M.: Medical and Surgical Clinics. 2.30 P.M.: Operations. X Rays.

LONDON SCHOOL OF CLINICAL MEDICINE (Dreadnought Hospital, Greenwich.)—2.30 P.M.: Operations. Out-patient Demonstrations:—10 A.M.: Surgical and Medical. 11 A.M.: Eye.

ROYAL INSTITUTION OF GREAT BRITAIN (Albemarle-street, W.).—3 P.M. Prof. J. J. Thomson: Röntgen, Cathode, and Positive Rays.

ROYAL SANITARY INSTITUTE (Parkes Museum, Margaret-street, W.).—11 A.M. Discussion on the Bacterial Treatment of Sewage, with Special Reference to the Biolysis of Organic Nitrogen (opened by Mr. W. D. Scott-Moncrieff). 2.10 P.M.: Train leaves Waterloo Station for Ashford to visit the Staines Sewage Outfall Works.

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MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. II. of 1906, which was completed with the issue of Dec. 29th, were given in THE LANCET of Jan. 5th, 1907.

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(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Feb. 21st, 1907.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Feb. 15	30·068	S.W.	0·01	54	51	37	42	43	Overcast
,, 16	30·022	N.W.	0·01	79	48	43	43	45	Cloudy
,, 17	30·050	W.	...	64	53	43	44	45	Cloudy
,, 18	30·060	S.W.	..	58	51	44	45	47	Fine
,, 19	29·846	S.W.	0·02	73	51	41	41	42	Overcast
,, 20	29·056	WNW	0·21	73	45	37	34	38	Fine
,, 21	29·510	N.W.	0·01	64	39	37	35	38	Snowing

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